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ORIGINAL ARTICLES.

THE CLIMATE OF ARIZONA.

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"There is probably no country on the globe, that shows so many striking and picturesque topographical contrasts as does Arizona. Frightful chasms, dark and gloomy canons, massive mountains, rolling plains, rich and fertile valleys, arid wastes and beautiful mountain vales form a panorama of nature at once in her wildest and most gentle mood. Here time has wrought mighty changes, and the face of the land yet bears the traces of the fearful convulsions which rent it from end to end. From Utah to Sonora, and from the great Colorado to New Mexico, the same physical features are met with. Mountain and valley, table-land and plain, barren peak and rocky gorge, and above all a sky without a cloud and a sun unequaled for brilliancy. Such a land is Arizona; a land blessed with many a gift, and showing a wild and attractive beauty that well becomes a clime that has given birth to a race wilder than its canons and mountains, and with natures as fiery as its summer suns."*

In order to understand the nature of the climatic conditions found in Arizona, and to study the climate intelligently, it will be necessary to first glance at the geographical location, its area and topography.

Arizona is situated between 31° and 37° North Latitude and between 109° and 114°.40′ West Longitude. It is bounded on the north by Utah and Nevada, on the east by New Mexico, on the south by the Mexican State of Sonora, and on the west by California and Nevada. Its area, according to the latest surveys, is 113,916 square miles. Its length from north to south is over 400 miles, and from east to west more than 350 miles. It is larger than the combined areas of New England, New York and New Jersey. Its altitude varies from below the level of the sea to thirteen thousand feet above sea-level.

The conditions which confront the student when he begins to study the climate of Arizona are so unlike those which obtain in the Mississippi Valley and the Atlantic and Gulf States, that he is compelled to look for some general cause for the radical difference.

On the Atlantic Coast, from the Gulf of St. Lawrence to Alabama, the Appalachian mountain system extends, having throughout its course a general north-

*"The Resources of Arizona," 1884. Patrick Hamilton.

east to southwest trend. Generally speaking, this range, which corresponds to the Cordilleran mountain system of the Pacific Coast, has a moderate altitude, rarely more than 5,000 feet; the ranges and spurs all have a uniform and parallel direction, and the ascent is gradual. From the sea-coast on the east, and from the plains on the west, there appear, in the order named, a gently undulating rolling country, then hills of moderate altitude, and these coalescing form, with a gradual general elevation of the entire mass, the mountains proper. There are no enormous canons like these of the Colorado and Columbia, and the elevations extend over large areas of country.

The Atlantic Coast is influenced by no equatorial ocean current. Hence it is that New York, which is about the same latitude as Naples and Madrid, has a climate much like that of Northern Scotland or Scandinavia, which localities are at about the same latitude as Northern Labrador. An altitude of 5,000 feet does not deplete the wind currents of their moisture, so that the valleys which are located between the mountain ranges are everywhere well watered, both from the Atlantic Ocean and from the Great Lakes. There is, therefore, no region of the Atlantic seaboard which is deficient in moisture, and there is on the contrary a marked humidity. All this vast territory, including not only the Atlantic Coast, but also the Mississippi Valley where the conditions are virtually the same, is subject to great alterations in temperature. Great heat in summer and excessive cold in winter being the marked characteristics, with sudden changes in temperature and markedly humid atmosphere, in which the *sensible* extremes are felt with a discomfort which is unknown in the arid regions.

On the Pacific Coast the conditions are entirely different. Here, too, a gigantic mountain system ranges between the Mississippi Valley and the ocean. Like the corresponding system on the Atlantic Coast, its general trend is towards a central axis, the direction, however, being from northwest to southeast. Generally speaking, this range has a high altitude, frequently more than 5,000 feet, and as high as 15,000 feet in every State and Territory. The ranges and spurs do not have a uniform and parallel direction, but are cut up in every direction, making in reality a series of mountain ranges of independent trend. Finally, the ascent is always abrupt and from the soft nature of the elements composing the mountains, the streams have cut their way far below the level of the surface; hence the gigantic canons.

The Japan Ocean Current also has an important influence on the climatic conditions of the Pacific Coast. This stream, arising in the equatorial regions, flows north along the eastern shore of Asia until it strikes the shores of Northern Siberia and Alaska, where, after being tempered by the cold waters from the Arctic regions which come down through Behring Strait, it flows southward along the western shore of North America as far as the equatorial regions. The stream has a most decided effect on the temperature of the entire Pacific Coast, and also influences the trade winds and the rainfall. The large body of water which comprises the Japan Current being always at the same temperature, it follows that the atmosphere of the entire coast region remains, with little variation, the same throughout the entire year. So that while the people of the north and east are enduring the most intense cold or the most oppressive heat, the people of the Pacific Coast are enjoying a temperature which is most equable and moderate. While the effect of the Japan Current is felt over the entire western coast of North America in a general way, principally from a moderation and equability of temperature, still, from this peculiar topography of the country, the modifications of temperature, humidity and rainfall are very marked. Thus, for example, Washington, Oregon and Northern California, west of the mountains, are excessively humid and equable; whilst east of the mountains the rainfall and humidity are deficient and the temperature almost entirely dependent upon altitude and latitude.

In addition to the Japan Current, another large stream of warm water makes its influence felt along the Pacific Coast. This is the North Equatorial Drift Current. Arising in the

north equatorial region this stream flows westward along the Tropic of Cancer until it strikes the Japan Current as it flows northward along the eastern shore of Asia. By this current it is turned north as far as the island of Nippon, Japan, by which it is deflected east. It then flows almost due east, between the fortieth and fiftieth parallels of latitude to the western shore of North America, where, meeting the Japan Current on its return from the Arctic regions it is deflected south. It now follows the Japan Current southward as far as the thirtieth degree of latitude, when, meeting the Equatorial Counter Current from the southwest, it is deflected westward, from whence, flowing over the Hawaiian Islands, it arrives at its original starting point. The water of this stream, after flowing for upwards of four thousand miles through the equatorial region, emerges therefrom to flow through the temperate region. From the length of time which is required for this stream to pass through the tropics it is apparent that the water must be warm. In passing through the temperate region it never reaches higher than the forty-fifth degree of latitude and even then the waters and atmosphere surrounding it are tempered by the Japan Current. It follows, therefore, that this stream is always exceedingly warm and the winds which arise and blow over it are always bland. The effect of this is felt all over the Pacific Coast and even beyond the Rockies; where, as far inland as the Dakotas, the fierce blasts of midwinter are occasionally replaced by a balmy spring-like wind—the "Chinook" —which causes the great dritts of snow to vanish within a few hours.

At the southern borders of British Columbia and Alberta, the great Cordilleran mountain system divides into two immense chains: the Rocky and Sierre Nevada. The former extends through Montana, Idaho, Wyoming, Colorado and New Mexico, while the latter passing near the coast, traverses Washington, Oregon, and California and ends by forming the peninsula of Lower California. These vast mountain ranges form, almost without a break, two gigantic walls five thousand feet and over in height. The territory between these stupendous barriers comprises besides Utah, Nevada and Arizona, the eastern portions of Washington and Oregon, and the western portions of Idaho, Wyoming, Colorado and New Mexico. The entire region within these limits is an arid waste, except where the altitude rises to above five thousand feet; for the moist laden winds from the Pacific find the Sierra Nevadas an insuperable obstacle to their progress, and what little moisture reaches the eastern slope of the Rockies is entirely condensed before the winds can cross the summits. The moisture for this immense region is either derived from such bodies of water as the Great Salt Lake and the Gulf of Lower California, or gains entrance through an occasional mountain pass, and this meagre amount of moisture is so rare that it will only condense on the higher altitudes.

Arizona lies at the southern extremity of this great basin. It is situated far inland and has a southwestern exposure. In viewing the topography of the country as a whole, we find the highest point of elevation at the northeastern portion of the territory, in the San Francisco Mountains, the highest peak of which, Mount Humboldt, raises its snow-clad summit to a height of thirteen thousand feet. From thence, there is a general depression in a southwesterly direction as far as the basin of the Colorado desert, which is below sea-level. Probably no country in the world presents such great diversity of altitudes within such limited areas. One may stand on the brink of the Grand Cañon of the Colorado and within a few hours make a sheer descent of a mile and a half to the banks of the stream.

The contour of the country is peculiar. It has been likened to a wash-board. With the southeastern extremity so tilted as to represent the highest altitude of Mount Humboldt and the southwestern extremity, so as to represent the depression below sea-level in the Colorado desert, the corrugations running from northwest to southeast, but with many breaks in the continuity of the ranges, one obtains a rough conception of the topography. Although the ranges have a general trend from northwest to southeast, the drainage, owing to the confused and broken contour, is entirely to the

southwest; and the rivers which drain this vast area, in order to gain access to the sea, have cut great cañons and gorges through the soft elements which compose the mountains.

Everywhere throughout the territory, plains and mountains alternate; the latter rising abruptly from at or near sea-level, to a height of several thousand feet. One may stand on the mesa at Tucson, at an elevation of twenty-four hundred feet and see a distance of one hundred miles. Within that vast scope no less than six separate mountain chains are in plain view, seemingly but a few leagues distant, which range in altitude from four thousand to eleven thousand feet. These mountains, above an altitude of four thousand feet are covered with great forests of pine and fir; while the intervening mesas are nothing but arid wastes.

This peculiar topography has a decided bearing on the climate of Arizona. So frequent are the mountain ranges that their summits represent, so far as the wind currents are concerned, the general level of the country. Hence it is that the moist laden winds pass over the intervening valleys and condense on the tops and sides of the mountains; the rainfall being directly proportionate to the altitude.

TABLE I.
SHOWING THE RELATION BETWEEN RAINFALL AND ALTITUDE.

STATIONS.	ALTITUDE.	RAINFALL.
Camp Colorado	0 feet	2.05 inches
Yuma	141 "	3.05 "
Gila Bend	735 "	6.15 "
Phœnix	1068 "	7.08 "
Tucson	2400 "	11.00 "
Fort Huachuca	4785 "	15.33 "
U. S. Station, Chiricahua Mountains	7400 "	22.33 "

A study of the temperature records for Arizona show that the entire territory is influenced by the conditions which effect the other portions of the Pacific Coast, although only to a slight degree. Thus, the temperature of Tucson is milder than the temperature of Atlanta, although the latter city is more than 1,000 feet lower than the former; and the temperature of Yuma is milder than that of New Orleans, notwithstanding the fact that the latter is more than 200 miles nearer the equator than the former.* Aside from these general conditions, which make all regions of the Pacific Coast warmer than corresponding latitudes on the Atlantic and Gulf Coasts, the temperature of Arizona is largely dependent on altitude.

I repeat, the temperature of Arizona is slightly warmer than corresponding altitudes and latitudes on the Atlantic Coast or in the Mississippi Valley. Further than this, the temperature seems only to be modified by altitude and humidity. We have no records of temperature at a higher point than Prescott; but we know that the temperature is lower as we ascend. At Flagstaff, we encounter several feet of snow with zero weather, and the summit of Mount Humboldt, far above the line of vegetation, is all but perpetually covered with snow.

It is astonishing how few physicians in the east are familiar with the climatic conditions of the arid west. For example, hundreds of invalids come to Arizona every year who have been recommended by their physicians to go to Arizona or New Mexico. They might almost as intelligently be instructed to go to the equator or to the North Pole. The patients usually go first to New Mexico, where they find all the towns where accommodations can be had, at an extremely high altitude. A high altitude in winter means cold weather. They are compelled to remain indoors, and after suffering intensely from the cold, for the accommodations are usually poor, they finally decide to try a warmer climate, which they cannot find in the United States, at a high altitude.

It will be noticed by Table III that of all the stations in southern Arizona, Phœnix shows the greatest variation of temperature, being the hottest in summer and the coldest in winter. Phœnix is at an altitude of 1068 feet, just midway between Yuma and Tucson. Under ordinary conditions we would expect to see the temperature there also midway in extremes between these two points. Although we have not at our command records of the relative humidity in the Salt River Valley for more than a period of six months, we feel quite safe in assuming that the difference is due to this cause. Phœnix is situated low down in the valley near the Salt River, and according to the well known principles of

*Mean annual temperature of New Orleans, 68.6°; of Yuma, 71.4°. Report of the Chief of the Weather Bureau for 1891.

gravity as applied to atmospheric drainage, the cold moist air settles in the most dependent localities. This is quite apparent by the sense of appreciation in the difference between the sensible and

TABLE II.

SHOWING THE DIFFERENCE BETWEEN THE TEMPERATURE OF TUCSON AND VARIOUS POINTS ON THE ATLANTIC COAST, MISSISSIPPI VALLEY, GREAT LAKES AND GULF OF MEXICO.

Table for nine months, October to June inclusive, 1891-2.

Stations.	Oct.	Nov.	Dec.	Jan'ry	Feb'ry	March	April	May	June	Mean Average
Philadelphia	59.9	44.2	42.8	31.4	35.2	35.8	50.9	61.9	74.3	47.95
New York	54.2	43.8	41.8	30.3	33.	34.6	49.9	59.4	72.	46.55
Boston	51.6	41.4	40.4	28.3	28.4	32.9	48.4	55.9	69.6	44.10
Richmond	59.8	49.2	47.2	39.2	43.9	44.9	57.7	69.9	78.4	54.46
Asheville	51.8	44.3	43.7	34.	45.1	43.8	53.8	64.8	68.4	49.96
Aiken, S. C.	58.	51.5	49.2	41.1	48.	50.				
Atlanta	58.7	49.	47.	38.3	47.8	48.	59.	68.8	72.2	54.75
Chicago	52.6	33.8	35.4	19.5	30.2	31.	44.	52.4	64.4	40.36
St. Louis	57.6	41.2	42.8	25.9	40.	40.4	54.	62.8	76.6	49.03
Tucson	70.8	58.9	44.4	49.2	52.8	57.	61.8	69.6	79.2	60.41

actual temperatures, to which anyone will vouch who has driven through a river valley or an irrigated bottom in the arid region. The sensible difference between the temperature of Phœnix and other points of southern Arizona is decidedly marked; Phœnix being sultry in the hot season and chilly during the cold. The actual temperature shows greater extremes for reasons which depend on the fundamental principles of natural philosophy. Moist air is heavier than dry air, and is a poorer conductor of heat and cold. Consequently during the intense heat of summer radiation does not take place with sufficient rapidity during the night to lower the temperature to that of other localities outside the irrigated district. For the same reason in winter the heat of the sun during the day is not sufficient to raise the temperature to that of the other stations. It is not the presence of the river which causes the increase of relative humidity, for Yuma, which is situated at the junction of the Gila and Colorado rivers, has the lowest relative humidity of any region of the territory where the records are kept. But at Phœnix, for several

TABLE III.

SHOWING THE RELATION BETWEEN TEMPERATURE AND ALTITUDE.

STATIONS.	ALTITUDE	MEAN MINIMUM	MEAN MAXIMUM
Yuma	141	42	106.3
Phœnix	1068	32	107.3
Tucson	2400	35	100.8
*Prescott	5389	20	84.9

*Prescott, in Northern Arizona. But the conditions are the same as for regions in Southern Arizona at corresponding altitudes.

miles above and below the city, the country is watered by irrigation and the soil is so thoroughly saturated that the level of the water beneath the surface has been raised from a depth of seventy, to from twenty-five to thirty feet. This condition is no more pronounced at Phœnix than at any other point where irrigation is practiced. As for example, in northern Colorado where, prior to the introduction of irrigation an extremely low percentage of moisture existed. Since all that region has been irrigated the relative moisture has been so increased that they now have dews where formerly dews were unknown. The emanations from the growing vegetation also increase the relative humidity, although sufficient areas have not been irrigated to make any perceptible difference in the amount of precipitation by rainfall. What these artificial changes may bring about in time, no one can predict; but it is well known that bodies of water which are surrounded by irrigated regions, such as the Great Salt Lake in Utah, are gradually increasing in volume. The surface of the Great Salt Lake has risen several inches in the last few years.

The report of the United States Weather Observer at Phœnix, makes the relative humidity at that point, for the six months October to March, 1895-6, inclusive, 52.82 per cent. Records for Tucson during the same period are not obtainable. But compared with other years, when the precipitation was about the same as for this season, we find the relative humidity in the irrigated districts about twelve or fifteen per cent. higher than at the other points in Southern Arizona.

What the invalids from the north and

east seek, is a winter climate. Very few of them can be induced to go to the arid regions during the summer months; but with the advent of cold weather, after they have taken a few colds, they set out for a warmer clime.

The climate of Arizona is peculiarly adapted to the requirements of people suffering from pulmonary disease. They need a climate wherein they can live out of doors. No one will dispute the statement that the out-door life is the one for the consumptive. Observations made by veterinary surgeons show that tubercular cattle always improve when turned out to graze, and almost every case of tubercular phthisis which I have known to recover in the west, has given a history of out-door life. By out-door life, I do not mean that the patient is to spend a few hours each day in the open air, to return in-doors when he becomes a little fatigued. I mean that he should remain in the open air as do the cattle which are turned out to graze, day and night, and for weeks and months at a time.

A few months ago the writer visited the city of Sacramento, and while there was taken by Dr. Wallace A. Briggs to see an interesting case. As the writer now remembers the case, it was as follows: The patient was a man, aged seventy-six. He had contracted tubercular phthisis in the spring of 1850, while a resident of the State of Indiana. He emigrated to California at that time, and was compelled to make the journey on horseback. He stated that he was a year in making the trip, and, during that time, he recovered. Since then he has had no trouble save on one occasion when he visited New York. He then became worse, and was compelled to terminate his visit abruptly and return to the west. The writer examined this patient, found impaired resonance, increased fremitus and all the signs of marked involvement over both apices and over almost the entire area of the left lung. By auscultation and percussion, he detected a cavity in the left apex which was quite the size of a small orange. The patient stated that his lungs gave him no trouble whatever. Dr. Briggs informed me that he was suffering somewhat from tachycardia and was developing some symptoms of senile inanition, but was not troubled with his lungs.

This I considered an exceedingly instructive case, as it impressed upon me the necessity for out-door life in the treatment of pulmonary tuberculosis. I have pronounced hopeless many a case which was not as much involved as was this one, and seen my prognosis verified.

In order that the patient may live continuously in the open air for a period of several months, or, for that matter, for a year, or several years, a climate is required which is continuously warm and dry. Such a climate the United States does not possess. But the nearest approach to it is, I believe, in the deserts of Arizona. But the ideal climate cannot be found above the frost line. While I believe that the climate of Southern Arizona possesses features which are far superior to those of any other section of the United States, yet I am compelled to admit that I think there are many climates which will in time be found to be superior. A desert region in the tropics, at an altitude sufficiently high to avoid a too intense heat, would be superior to anything yet described, and would, according to my idea, fill the requirements much better.

What the people seem to look for is a winter climate. Even physicians rarely send their patients to the arid regions during the summer. This I consider a great mistake. I think the patients should be sent to the arid regions as soon as there is evidence of infection from the tubercle bacillus, and should be made to remain there until they are well, or until it is apparent that the case is hopeless. The climate of Southern Arizona is a winter climate. We do not recommend that the patients come here for the summer, unless they enjoy or are able to stand the heat. For those who can stand warm weather, I think the summers much better than the winters; for, owing to the heat, everybody is compelled to sleep out of doors, and this I consider more important than any other feature of the climate.

It is not necessary that patients be required to remain in one town, or at the same hotel, all the time. If they have the means to travel about, there are many places of interest which they

can visit and thus add greatly to their pleasures. For example, during the hot months of summer, when the heat of the low lands becomes well-nigh unbearable, the patient may go to the northern part of the territory where he will find, besides a dry, warm climate, many of the most interesting and remarkable natural wonders which the world possesses. Among these may be mentioned the Grand Canon of the Colorado; the Wind Carved Rocks, and the Petrified Forests. Such attractions as the Moqui Indian villages, Cliff Dwellings, and the ruins of many ancient civilizations are frequent. In the Salt River valley there are ruins of a city which must have contained a population of 300,000. These numerous ruins, which are found all over the territory, with their hieroglyphics and pictroglyphics, will well repay investigation by the student of ethnology. In the country surrounding Flagstaff, in the San Francisco Mountains, is the largest unbroken pine forest in the United States. Here, the sportsman may find deer, antelope and bear, not to speak of small game or fish. After several months of outing, he may return to the southern part of the territory to spend the winter. There, day after day, he may bask in the sun, and lead a life which is practically an out-door one, all the winter through. In southern Arizona, almost the entire rainfall occurs in two months, usually the months of August and December; while in the northern portion of the territory, the greatest precipitation is in the winter snow. Unfortunately we have not at our command the records of rainfall, humidity and temperature for the northern part of the territory, but it will suffice to say that it is no place to send tubercular patients during the winter months.

The rainfall in the territory of Arizona varies directly as the altitude (see Table I). At an altitude of 7000 feet (Flagstaff) it is about twenty-three inches. The table below shows the rainfall at Tucson as compared with some other points in the United States.

TABLE IV.

SHOWING THE DIFFERENCE BETWEEN THE RAINFALL AT TUCSON, ARIZONA, AND OTHER POINTS IN THE UNITED STATES.

Stations.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Boston	4.39	3.66	3.94	1.71	1.56	3.06	3.73	3.87	2.29	5.56	2.35	3.58	39.7
New York	5.78	4.69	4.22	2.37	3.10	1.18	4.11	5.87	2.12	2.69	2.06	3.30	41.4
Philadelphia	3.65	4.71	4.42	2.34	1.74	2.51	4.65	4.22	1.90	2.57	1.70	3.78	38.1
Richmond	4.30	6.89	9.70	2.21	4.45	5.51	5.86	5.86	2.32	2.04	2.02	1.67	52.8
Atlanta	6.73	8.50	10.16	1.58	2.17	4.71	5.38	2.59	1.19	0.02	3.26	3.68	49.7
Jacksonville	1.19	0.32	4.02	1.72	2.78	3.31	4.08	3.67	0.83	4.43	1.53	3.46	41.3
Mobile	6.50	4.54	6.96	1.65	0.67	7.09	7.50	3.50	4.05	0.20	7.60	6.81	57.0
Meridian, Miss.	9.18	8.15	10.59	1.95	1.36	6.65	10.13	0.86	0.36	0.07	6.80	7.47	63.5
New Orleans	3.75	7.42	2.67	0.26	0.76	4.45	4.57	1.69	3.43	2.38	3.31	3.93	38.6
Chicago	1.99	1.95	2.13	3.14	2.09	2.42	2.47	4.52	0.32	0.36	3.83	1.32	26.5
Denver	1.60	0.27	3.10	2.49	4.15	2.93	0.59	2.84	0.73	0.48	0.69	1.56	21.4
San Diego	1.21	4.84	0.27	0.76	0.35	0.05	T	0.00	0.08	0.04	0.10	1.29	8.89
Los Angeles	0.25	8.56	0.41	1.26	0.31	0.00	T	0.00	0.06	0.00	0.00	1.99	12.8
San Antonio, Tex.	5.63	0.09	1.18	4.57	2.36	2.16	0.85	1.06	3.60	0.60	0.92	5.73	29.2
Tucson, Arizona	0.12	2.08	0.17	0.00	0.18	0.22	0.70	2.26	0.65	0.00	0.00	0.23	6.61

Report of the Chief of U. S. Weather Bureau, 1891.

A warm dry climate is the one which seems most suitable for the tubercular patient. We have already discussed the element of temperature in Arizona as compared to that of the Atlantic Coast and the Mississippi Valley. But there is another element in connection with temperature which we have not discussed, and which has, I think, a great bearing on the selection of a climate. I refer to the *sensible*, and *actual* temperatures. In this matter, I can do no better than quote from the report of Professor Edward M. Boggs, of the University of Arizona. In his article on the "Climate of Arizona,"* he says:—

"The simple thermometer, no matter how accurate it may be, does not measure temperature as felt by animal life. Its records must be considered in connection with certain other data in order to afford a mode of comparison with the climates of other portions of the earth. We may term the reading of an accurate thermometer the *actual*, and the sensation of heat or cold as felt by the higher orders of animal life the *sensible* tempera-

*Arizona Agricultural Experiment Station, Bulletin No. 20.

ture. Neither of these is a measure of the other. The fact is well known to meteorologists, that the thermometer alone cannot indicate the *sensible* temperature, but that the humidity of the air must be considered in connection with the actual temperature. This fact is also known to dwellers in the arid region, but it is not known to the majority of otherwise intelligent people throughout the world.

"Where the percentage of atmospheric moisture is high, both extremes of temperature are felt to be greater than the thermometer indicates. Everybody knows something about that condition of the weather which is variously termed 'sultry,' 'close,' or 'muggy.' These terms describe the result of a combination of heat and moist air. This is the condition which exists commonly in the tropical regions of the world where the rainfall is heavy, and in the same way, though in a smaller degree, throughout the United States outside of the arid region. It is especially noticeable in the States bordering on large bodies of water, such as the Gulf of Mexico or the Great Lakes, and is conspicuously absent from the greater portion of Arizona.

"In the dry air of this territory sunstrokes are unknown, while in the Mississippi Valley and in the states lying eastward whole columns of the newspapers are filled with accounts of prostrations from heat; and the fatalities are numerous whenever the thermometer indicates 90° F., or upwards. At many places along the sea-coast, where the humidity always remains near the point of saturation, a temperature of 85° brings excessive discomfort, and exertion or exposure to the sun is extremely hazardous. Men and the lower animals perform in safety their customary labor beneath the cloudless skies of Arizona, under the highest temperature ever experienced here. The dry air induces exceedingly rapid evaporation of the abundant perspiration, thus keeping the body at a comparatively low temperature. As a matter of course, the supply of fluid must be maintained, hence the great thirst so often experienced by travellers in desert regions, and the imperative necessity for an adequate supply of drinking water. Of all the lives lost on the desert stretches of Western America—and their number is not small—not one is directly attributable to heat, but to thirst. The experienced traveller provides an ample supply of water and fearlessly invades the worst desert yet discovered.

"An amount ranging from fifteen to perhaps thirty degrees, according to the humidity, should be subtracted from the maximum *actual* temperatures in Arizona, during the hot season, to indicate the *sensible* temperatures. In like manner, the dry air of the arid regions enables extremely low temperatures to be endured without discomfort. The winter cold of the Canadian Northwest Territory is much less disagreeable than that of the United States immediately south of the Great Lakes. The lowest temperatures known on the high plateau of Arizona, bring less discomfort than a chilly day in New Orleans."

It is when we come to study the relative moisture which exists in the atmosphere of Arizona that we see the most striking peculiarity of the climate. Table V shows the difference in relative humidity between the climate of Tucson and that of other portions of the United States. It will be noted that the relative humidity does not always depend upon the amount of precipitation, as for example, San Diego, Cal., which has a rainfall almost as deficient as that of Tucson.

TABLE V.

SHOWING THE RELATIVE HUMIDITY AT VARIOUS POINTS IN THE UNITED STATES AND AT TUCSON, ARIZONA.

For the nine months, October to June inclusive, 1891-2.

STATIONS.	8 A. M.	8 P. M.	AVERAGE
Boston	70.	66.4	68.2
New York	73.4	69.7	71.6
Chicago	80.2	75.5	77.8
Norfolk, Va.	80.4	73.	76.7
Atlanta, Ga.	78.8	65.4	72.1
Mobile, Ala.	85.2	77.4	81.3
Jacksonville	79.8	72.2	76.
Meridian, Miss.	85.7	73.2	79.4
San Antonio	70.1	50.4	60.5
Los Angeles	77.	65.4	71.2
San Diego	78.2	69.1	73.6
*Asheville, N.C.			68.7
Tucson, Arizona	56.5	28.7	42.6

**Therapeutic Gazette*, Oct. 16th, 1893.

I think that this feature of the climate of Arizona is what makes it so beneficial to "pulmonary" patients. I know of no country which possesses, in addition to a moderate altitude, a warm equable temperature with such a low degree of relative moisture. If it be a dry at-

mosphere which the patients need, and I think all observers agree that a dry atmosphere is the most essential element, then Arizona can surpass anything on this continent, if not, indeed, anything in the world.

Were we, in our report, to exclude the two months of heaviest rainfall, the mean relative humidity would be fully ten per cent. lower than that given in the table; while in other portions of the United States there is no corresponding decrease. For example, in the month of June 1892, the average relative humidity was twenty per cent., and for August and February of the same year (the months of greatest rainfall) the average relative humidity was respectively thirty-eight per cent. and sixty-nine per cent. During the greater part of the year the inhabitants of southern Arizona sleep out of doors. I have slept, night after night, for weeks at a time, without being aware of the presence, even, of dew. It is difficult, at first, to induce the "tenderfoot" to sleep in the open air. He has visions of tarantulæ, scorpions and centipedes, which are disquieting. But in the course of time, he learns that these insects are so rare as to be curiosities, and that their sting is to be dreaded not so much as that of a California flea. The sensational Arizona tales of poisonous reptiles and insects, of murderous Apache raids, and of cow-boy and desperado shooting scrapes exist only in print. They have no modern foundation in truth.

Many physicians in the east order patients to California for the winter, apparently with a view of sending them to a dry climate. California is deficient only in rainfall. If the reader will look at Table V, he will notice that relative humidity in southern California is as great, and in some instances greater, than that of the Atlantic Coast. He may also be surprised to know that many of the best physicians in California regularly send their tubercular and asthmatic patients to Tucson. California is a beautiful country, and is a delightful country in which to live if one can stand a high percentage of humidity. But the fogs which come in from the sea, and the emanations from the vast irrigated regions, make it far inferior to the inland desert regions for phthisical patients. I think it may be assumed as a general rule that wherever there is irrigation, there is a high degree of relative humidity. It is my opinion that patients suffering from pulmonary phthisis should never be sent to an irrigated district. In addition to the high degree of humidity, there is usually associated the miasmatic micro-organisms. Indeed, some of the California physicians have declared that "irrigation and malaria go together."

The city of Tucson has, in my opinion, advantages as a health resort which cannot be equalled anywhere in North America. I know of no locality where such a moderate winter climate and such a low degree of relative humidity are combined with the same latitude and altitude. It is no longer considered imperative to send tubercular patients to an altitude of 5,000 feet, or over. In fact, clinical experience has proven that more frequently patients require to be sent to an altitude of less, rather than more than 3,000 feet. The altitude of Tucson is 2,400 feet, and that seems to be amply high for all but the most exceptional cases. The city is situated in a basin, near the underground Santa Cruz river. It is completely walled in by massive mountain ranges. To the north is the Santa Catalina range; to the east, the Rincon; to the south, the Santa Rita; and on the west, the Tucson. Each of these ranges has an altitude of 5,000 feet, at least. Mount Lemon, the highest peak of the Santa Catalinas, has an elevation of over 7,000 feet, and Mount Wrightson in the Santa Ritas, reaches an altitude of nearly 11,000 feet.

Surrounded as it is by this impassible wall, the city is protected from wind and rain. The humidity is less than that of any other city in the United States. Moreover, it will always remain virtually unchanged, for irrigation is not, and never can be, carried on to any extent. The reasons for this are two: First, there is no water; and second, the soil is such that nothing more than a few shade trees and small fruits can be grown, and these only when great care and attention have been devoted to them. I must make an exception in regard to flowers. Roses

bloom in the gardens in magnificent profusion, almost every month in the year.

The scenery at Tucson is as impressive as anywhere in the Rocky Mountains. The gorgeous sunrises and sunsets beggar description. There are fine drives, cañons and ruins. The characteristics are those of the desert, the charming peculiarities of which are novel and entertaining to people who have been accustomed to live in the humid regions.

I wish to call attention to one more of the features of southern Arizona before I close. I refer to the sunshine. During the nine months, October to June, inclusive, 1894-5, there were but twenty-five cloudy days, and nine of these were in one month. Some idea of the transparency of the atmosphere may be had when I state that, at midday, and with the unaided eye, I have seen Venus when it was but ten degrees east of the sun.

The writer feels kindly toward Arizona. One year ago, in Philadelphia, he was attacked with two hemorrhages from the lungs. He had a bad cough, and was losing flesh rapidly. On the advice of a distinguished member of this society, he went to Tucson. Since that time he has gained twenty-six pounds in weight, and now is a well man.

RECTO-VAGINAL ANASTOMOSIS.

JOSEPH PRICE, A.M., M.D., PHILA.

When one considers the number and character of procedures in abdominal work; the comparatively recent period in which many of them have come into surgical practice; the number of operators; the number of troubles with varied complications for which operations are done, with greater or less success, it is difficult to determine to whom is due credit for evolving, originating, or approximately perfecting any particular procedure. The claimants are many, while the mere shadow of the right of claim lies with the very few. There is no channel through which professional notoriety is sought with more eagerness and with less sample as to the solid ground and integrity of the claim to having originated a new procedure or method or to having modified and improved an old one. Repeatedly we hear an echo from the inventive, original geniuses of the profession of the shout of the ancient Greek philosopher—*Eureka!* With too many, tools and methods are about as varied and numerous as those of an amateur horticulturist.

Whatever may be the merit of a procedure as measured by the successful issues of its use, it is certain to be assaulted by those in whose hands it has been a failure. With these men instruments and methods are preëminent—the surgical judgment and practical skill with which they are applied are of secondary importance. With the trouble recognized and surgery clearly indicated, the simplest known method with few and simple instruments, plain and clean surroundings, no side tables suggestive of an old junk shop, favor successful surgery. That there is much to perfect in surgical procedure and that there is yet more in what may strictly be designated as surgical art, there can be no question—yet this perfecting must come of wide and varied experience, be the evolvement, the suggestion, of the hidden complexities we find in the cases coming within our surgery. In surgery lines of treatment cannot be marked out with mathematical certainty. The most of us are going on recrystalizing and carrying into practice old ideas to which we are prone to lay claim as original with us, ideas gleaned in our reading, gained in the observance of the work of other men,—or it may be that we have "unconsciously absorbed" during foreign travel and while witnessing the skillful work and enjoying the genial and generous

hospitality of our German contemporaries. It is fortunate that the ethics and the common law of the profession prevent the patenting of surgical machinery. Such a privilege would throw open a field filled with temptations to a debasing form of professional greed. The latest method of great promise is the X rays. The Röentgen family promises to be the largest of the generation,—in it is carried out the Biblical injunction to "multiply." A great covey of little Röentgens have invaded our modest Quaker town. We see pictures of them, with their nice little aprons on, taking photographs. No one can look at their kindly, innocent faces, "child-like and bland," without seeing the lines of the philosopher just beginning to show around eyes to which the twentieth century is all light.

But X is too low down in the alphabet—there will be other letters claiming precedence and disputing as to the penetrating power of their rays. There is always a happy aptness in the words of Holmes:

"Our art has had two or three lessons which have a deep meaning to those who are willing to read them honestly. The use of water-dressings in surgery completed the series of reforms by which was abolished the 'coarse and cruel practice' of the old surgeons, who, with their dressings and acrid balsams, their tents and leaden tubes, 'absolutely delayed the cure.'" There can be but little doubt that many hastily devised new methods—and so-called modifications of old, repeatedly tried and successful ones, have "absolutely delayed the cure."

I have a number of times in pelvic surgery—where the destruction of organs and viscera is sometimes very extensive—been compelled to devise something new to me, something I could not recall as having seen in our literature or reports of cases. This probably has been the experience of all surgeons of wide experience. A foreigner not many years ago published an article and an illustration of Sim's duck bill speculum. He claimed it all as original with himself. Schrœder devised many good things in ovarian surgery and about all of them have been claimed by others. It is my purpose to report only procedures where thoroughness is of paramount importance. In malignancy of the uterus —in cervix, fundus,or both,we occasionally have invasion of the bowel. I have many times extirpated the uterus and found the invasion about the left-broad ligament, rectum or sigmoid. A few of these cases have later required inguinal colotomy. Thrice in cases managed by the non-operative method the fundus uteri and sigmoid have fused, the contents of the bowel passing through the uterus and vagina for some weeks or months before death. It occurred to me that extirpation of the malignant uterus and bowel with an anastomosis of vagina and large bowel would be a much safer, clearer and more radical procedure, if the cases could be operated on before general invasion. This form of operation is the only one by which the difficulties encountered in these cases can be overcome with any promise of favorable result.

In the case I report the pathological conditions were peculiar and mixed. The woman was about forty years of age, had given birth to seven or more children. She was small, feeble, and exhausted from disease and prolonged suffering. Vaginal examination showed everything fixed and immovable—physical signs of pus on the right and cystic disease on the left, with a large uterus studded with large fibroids. In the operation I found an old suppurating tube and ovary on the right side; on the left a malignant tumor about the size of a child's head, firmly fixed to the posterior wall of the uterus and anterior wall of the rectum.

After freeing the diseased tube and ovary of the right side, the enucleation of the malignant tumor on the left was found very difficult; it had invaded the bowel and uterus. I determined to remove the uterus with the malignant section of the bowel. The hysterectomy was done by the anterior method, incising anteriorly and retracting the bladder—opening the anterior vesico vaginal pouch and tying backwards—doing the operation from in front backward—not from behind forward. Two or three ligatures right and left were sufficient. The danger of wounding the ureters is about nil as they are pushed well off the cervix. This anterior method of extirpating the uterus gives a better field for

rapid work than any other method of extirpation where ligatures are used. Vaginal incision fore and aft the cervix, pushing the incised vagina well up makes the method simple and rapid. After completing the hysterectomy I amputated the bowel in healthy structures above and below and stitched the proximal extremity of the bowel in the upper extremity of the vagina, the size and mobility of both tubes favoring easy and rapid work. The patient made an easy recovery with daily evacuation after the fourth day. After evacuation of bowel and a vaginal douche at no time during the day was there a perceptible fecal odor or evidence of discharging of feces.

In colotomy we commonly have a bad atmosphere to live in,—patients sometimes complain bitterly of the disgusting opening—and further the malignant bowel remains after such procedures. Again it is only the upper rectum and sigmoid portion of the bowel that will permit of such a procedure. In two cases the operation has worked successfully, very much better than an anastomosis of the large bowel after removing a segment. Both cases recovered after the anastomosis, and one recovered with the button method. The other case died on the sixth or seventh day when I considered her in a fair way to a good recovery. Age may have had much to do with her death. She was up in the sixties.

The operation may be tersely summarized. Complete extirpation of uterus by the anterior method from the bladder back, and extirpation of malignant zone of bowel, and turning of bowel into the upper extremity of vagina.

Another operation to which I would refer, and one which I have not seen mentioned in our literature nor noted in the reported work of other men, is that of extirpating the diseased appendix, cutting it out of the head of the cæcum and closing the incised opening. All the patients upon whom I performed this operation recovered. The operations were done in the very class of cases now so generally and freely discussed in relation to removal of the appendix. The questions involved, the surgical problems, are so very vital in their interest and bearing that I will not attempt, in this paper, to reconcile controverted points. I will simply report two typical cases, illustrative of my opinion and practice. Fortunately, we have reached the end of all dispute as to the propriety of seeking and stitching up shot and incised wounds of abdominal viscera. All such wounds are now trimmed and sutured after free discharge of their contents — sometimes beer, crout, Dutch cheese and sausage. The abdomen is opened, wounds repaired, vessels tied, peritoneal cavity cleansed, and sometimes drained, followed by speedy recoveries. In view of the facts in this connection, the uniformly favorable results secured, the inquiry is a natural and forcible one: Why should the profession bother about a large variety of methods in dealing with a dirty, disorganized appendix, inverting it and in a variety of ways doing that which should not be done, and leaving that which in the majority of instances works mischief? Why leave behind seeds to produce a future growth of trouble and suffering? Certainly it would be better to leave behind, as near as possible, for our surgery to accomplish, wholesome conditions. Simply cutting out the dirty sinus, useless and an element of danger from its very disorganized state, gives just as good results when the small opening is closed, as you get at other points, and you thus avoid post-operative sequela, fistula and lurking dirty ligatures, which always delay perfect recovery. I am aware there are cases in which the extirpation method will not answer. The cæcum is dirty and disorganized, conditions not favoring the use of sutures. But in this group of cases you can stitch the head of the cæcum as safely as we do the small bowel when cheesy, disorganized and adherent to a large gross tube or an ovarian abscess, and as safely as we suture the bowel for perforating ulcer in typhoid fever. Surgeons are prone to allude to infection by the extirpation method. The reply is ready at hand, strong and difficult to answer. The critic's method is itself the best answer, that of transfixing a pus suture through the dirty sinus and permitting it to be folded in clean tissues. The inversion method does not always result in the diseased stump going into the cæcum. A number of the cases thus treated are

followed by fæcal fistula when the cæcum is apparently healthy and no abscess about it. I see by recent articles that the profession still dread peritonitis or general sepsis. I am glad such apprehensions only exist with general surgeons and not with the abdominal or pelvic surgeon. Our prolonged experience in suppurative forms of tubal and ovarian disease, where the disease extended from cæcum to sigmoid, gives every assurance of our ability to manage such cases without infection or sepsis. It is very well known that the peritoneal cavity and viscera have a thousand times been bathed and manipulated in pus, charged with every variety of organism, without the slightest evidence of sepsis. And where sepsis antedated the operation, the removal of the disease and septic fluids resulted in its prompt arrest. Such results have been obtained by a number of operators. The man who dogmatically states that a general septic or purulent peritonitis has never been saved, should limit his remarks to his own experience. He is not competent to speak for others. To illustrate how others can save patients suffering from appendicitis by the extirpation method, I will quote my friend, Dr. Torney, U. S. M. A., West Point:—

"I have had an appendicitis operation since I saw you, in which I followed your methods as far as I was able; removed the entire appendix and sewed up the incision in the bowel wall. The patient is well."

IMMEDIATE OPERATIONS.

T. J. HAPPEL, M.D., Trenton, Tenn.

In these days of rapid transit and travel, accidents are of every-day occurrence, and questions in surgery are presented that had not been more than dreamed of years ago, and since the organization of associations of railway surgeons, the matter of immediate operations for railway and other injuries has been brought prominently to the front in all of their meetings, giving profitable personal experiences, or deductions drawn from many other sources.

By immediate operations I mean operations made upon the injured as soon after the receipt of the injury as the surgeon arrives and can prepare for the same, regardless of the condition of the patient. Stimulants, heart tonics, etc., may or may not have been administered before or during the operation, but the work is not delayed waiting for results. An anæsthetic is given and the operation performed at once. The effort to bring about a reaction is made after the operation has been finished.

Let us draw the picture a little differently and examine it again. An habitual drinker falls from and has one of his extremities crushed by a moving train. Immediately his pulse begins to beat slowly and decreases in volume; then becomes smaller and smaller, and more and more frequent and thready, and before the arrival of the surgeon is covered by a cold and clammy sweat; the face assumes an anxious look; the patient expresses himself as dying; begs to be put out of his pain; calls for whiskey and morphine; talks rapidly and at times incoherently. He is placed upon the operating table, the limb is skillfully and rapidly removed, and death follows. Or, in this same patient, a slight hæmorrhage, which cannot be checked, goes on; heart tonics, strychnia, digitalis, nitro-glycerine, strophanthus, atropia, etc., are used hypodermically with no results so far as any reaction is concerned. Finally, in despair, as a *dernier resort*, the limb is removed and death follows. Again, a limb is crushed; pulse remains normally strong and full; no shock is perceptible. Strychnia is freely administered, the limb is removed, and the patient recovers.

Another picture. The crushed limb in the first patient is allowed to remain. It is folded on itself and bandaged so as

to control all hæmorrhage, and the attention then directed to bringing about reaction by the use of all the known remedies, including the intravenous injection of warm salt water, or the hot saline enema—it being a well-known fact that such enemata are rapidly absorbed from the rectum and introduced into the mesenteric and portal circulation. The pulse reduces in frequency, the cold clammy sweat ceases, the surface becomes warm, capillary circulation begins, amputation is then resorted to and in some cases the patient recovers.

The advocates of the so-called secondary or non-immediate operation advise that the delay should be long enough for the line of demarcation to be fully defined, then operate. At the very outset of this paper I desire to be understood as taking the ground that the patient is as much a rule for himself in surgery as in medicine. You must know and treat your patient, not the injury, so far as amputations are concerned. What will kill one patient scarcely hurts another. This was clearly proven in the late war, where soldiers with one finger shot off died, and others shot through the lungs or bowels recovered. Numerous cases of the kind could be cited. The first soldier was mentally depressed and despondent; the latter was determined to recover.

It has been my misfortune in the last few years to meet with two cases of limbs crushed by moving trains. Both patients were under the influence of liquor at the time of the accident. Both were young men between twenty and thirty years. In one the injury was just above the knee, involving the joint; in the other the leg was crushed from the knee to the ankle. In the first case a considerable quantity of blood had been lost before the patient was seen, two or three hours after the accident. In the other the loss of blood was slight. In both cases all kinds of stimulants were used, especially in the latter, except the intravenous injection of hot salt water. In both cases was found the cold, clammy sweat; the rapid, frequent, small, weak pulse; the sighing respiration; and all of the other symptoms indicating profound shock. In both cases the amputation was made as a *dernier resort*, hoping to stimulate and bring about a reaction. Both patients died, but not on the operating table. They would have died with an operation, but under similar circumstances, with the light of experience derived from those cases, I would not operate, but would trust to the intravenous injections of hot salt water and wait. I would not aid such cases in their departure. It is true that in the second case the pulse improved under the administration of the anæsthetic, but the patient died in a few hours, as did the first, after having been removed from the table.

In numerous minor operations there was no delay in my operating. Some ten years ago I was called to see a case in which the arm and forearm had been crushed on a pulley. There was a comminuted fracture of the humerus in its lower third; the radius and ulna were both broken; and the muscular tissue was reduced to a pulp. I saw the patient twenty-four hours after the accident. A useless effort had been made to save the arm. The patient's pulse was full and strong. Apparently everything was favorable for an operation, which involved the removal of the arm one inch below the shoulder joint. During the amputation the pulse continued good, till the assistant allowed the artery to roll from under his finger just as it was divided. At once there was one single spurt of blood, but with that shock the pulse at once went down, and the closest attention and most persistent efforts, continued for more than twenty-four hours, were required to save the life of the patient. He finally made a good recovery. This patient did not use stimulants of any kind. I recall another case in which the limb of a young lad had been crushed and ground up in the power of a cane mill. Amputation was made as soon as the patient was reached, and in ten days the boy was out on crutches. In 1894 I amputated a leg which had been almost torn off by a falling tree. At the time of the operation, the boy, who was not more than twelve years of age, was suffering from severe shock, but after the hypodermic administration of a full dose of strychnia, the anæsthetic was given, and when the patient was removed from the table the pulse was stronger than when placed on it. A prompt and uninterrupted re-

covery took place almost without suppuration. I might cite more cases, but these are sufficient for my deductions.

First, and most important of all, is the fact that each patient and each injury must be its own rule and guide. No arbitrary rule can be laid down by which to fix the time for an operation in cases of severe injuries. In slight injuries, with no shock or very slight shock, the sooner the necessary attentions can be given the patient, the better. The prognosis in such cases is favorable. As a rule, patients from ten to twenty-five years bear operations better than those younger or older.

Again, chronic alcoholics bear either primary or secondary operations poorly. Immediate operations can be made, if necessary, upon patients of good habits with a considerable degree of safety, but if the surroundings are favorable, every effort should be made to bring about a reaction before operating. But if the limb is virtually crushed off and needs attention to stop the hæmorrhage, and for that reason has to be handled and trimmed, then it is nearly as safe to proceed at once with the operation. We are not justified in operating in cases that are injured so badly that we are satisfied they will die. Nor should an effort be made to save a member that we know will be worse than useless—nay, even an impediment to its possessor. Such surgery is a reproach, an opprobium to the so-called conservative surgeon. A writer sums up the whole matter as follows: "It seems to me that there is but one question for us to consider as to whether we should urge a primary amputation or not, and that is shock. If our patient is not in a condition of extreme shock, and we know that the injured limb must be sacrificed, I cannot for a moment see why we should hesitate to operate as soon as we are able to do so. On the other hand, there are cases of shock in which to attempt further operative procedures would be destructive of the best interests of the patient. In these cases primary operations would be entirely out of the question."

One more point to which I would invite attention is the fact that the presence of pus in operations for railway injuries is no proof of a want of proper cleanliness, or of proper antiseptic precautions. Crushed wounds, such as we ordinarily encounter in railway injuries, generate pus; that is, they heal by a granulation process in spite of our anti- or aseptic surgery. This condition of things, the failure to unite by first intention, is due in most cases to shock, which for the time being impairs nutrition, lessens the general vigor and brings about blood changes, thus making a fitting soil for the growth and development of pyogenic cocci. The cocci have not necessarily contributed at all to the production of the pus, but the state of the system is such as to furnish proper pabulum for them, hence they are found in these cases in spite of all precautions that can be taken. These remarks in regard to the development and formation of pus do not apply with equal force to amputations in the upper extremity and those in the lower. In amputations at, or near, the shoulder joint, it has been no uncommon occurrence to obtain union by first intention. In one case in my practice in the last year, where my knife laid open a pus cavity in forming the anterior flap for an amputation just one inch below the joint, not one drop of pus formed. Union was by first intention in a most unpromising subject. The arm was removed because gangrene had set up just above and below the elbow, consequent upon a compound, comminuted fracture of the humerus just above the elbow, caused by a fall. The bandages had been applied too tightly. In the third case in this paper to which reference is made, I obtained almost equally as good results. In both cases hot water alone was the only antiseptic used. The reason for this difference in the tendency to the formation of pus in operations upon the upper or lower extremities is the comparative closeness of the shoulder to the centre of circulation, though bacteriologists claim it is due to phagocytosis.

Chloroform is the anæsthetic employed in all of my surgical work. I have operated under ether but twice since I left the hospital service, and in one of these cases, after administering ether for a while without result, chloroform was substituted for it.

Keep as near as ever you can to the first sources of supply—fruits and vegetables.—*B. W. Richardson.*

REPORT OF A CASE OF NEUROTIC BLADDER TROUBLE, AND SUBSEQUENT PYELONEPHRITIS, RELIEVED BY NEPHROTOMY.

J. B. F. DICE, M.D., MORRISTOWN, TENN.

In my report of this case, I wish to be brief, and will not theorize, but come to the practical point at once.

Patient aged thirty, female, married ten years, tubercular diathesis, a brother and sister having died with phthisis pulmonalis. Father died with pulmonary abscess. She was never very strong but rather inclined to be delicate. No history of pregnancy, or any special menstrual derangement save that of scant flow, and tendency to nervousness preceding the flow, often spending a restless and sleepless night preceding the setting up of flow.

First symptoms of neurotic bladder trouble developed in February, 1892, coming on suddenly. No perceptible cause at outset. There was frequent, scant and painful micturition. These symptoms in April became so intense and distressing, and especially at the close of the act of micturition, or just as the last drops of urine escaped, there was an intense pain or tenesmus, so intense that the patient was made to groan for one to five minutes. At this time the patient was forced to assume the recumbent posture, as when she was on her feet there was a sensation as if the viscus would escape from the abdominal cavity, and involuntarily she would place her hand over the outlet in the hope of relief. At this time there developed a pain to the right of the urethral orifice, and within the labia majora. So frequent were the calls to empty the bladder and so intense was the pain each time, that it became necessary to relieve her by giving an enema of one-quarter gr. morphia with $\frac{1}{150}$ gr. atropine. This would give relief from eighteen to twenty hours, when without this sedative she would be up every fifteen or twenty minutes. The urine at this time was neutral in reaction, low specific gravity, 1010 and below, slight trace of albumen.

An examination of the urethra revealed a slight inflammation at the meatus, which I hoped was a solution of the train of symptoms; but not so. Then the urethra was dilated and bladder explored with sounds and digitally, by a consulting physician. He claimed to have found as the cause papillematous growths within the bladder. Three hours after this procedure, which was done under chloroform, the patient had a severe chill with decided collapse and nervous shock, vomiting coffee-ground substance for forty hours, when relief was obtained. A remarkable feature in the case was that after the dilatation of the urethra there was no paralysis, the patient having complete control of the sphincter. After the lapse of a few days there was an abundance of pus in the urine. Her symptoms continued about the same until August, when a diagnosis of neurotic bladder trouble was made.

When we remember that the bladder receives its nerve supply partly from the mesenteric ganglia of the sympathetic system and partly from the lumbar portion of the spinal cord, and, as has been proven by experimenters, that the nerve centers which preside over the contraction and relaxation of the sphincter vesical are located in the lumbar region of the cord, we may concede that this portion of the cord governs the action of the urinary organs. On examination of the lumbar portion of the spine, I found tenderness under pressure with pain referred to vesical and urethral regions, and a feeling as if the bladder must be emptied. I used counter irritation over lumbar and sacral portion of the spine, giving internally bromides and ergot. This treatment relieved the symptoms to a great extent. There was still pus and albumen in the urine, not any more albumen, however, than the cystitis would account for.

In October, a new complication developed. The patient had a chill, followed by a temperature of 103°. Severe pain in right lumbar region, with a re-

turn of the former symptoms, frequent, scant and painful micturition. On examination, a tumor, the size of the fist, was found in the right lumbar region, extending down almost to a parallel line with iliac crest. After thirty-six hours there was a discharge of pus, mixed with blood, by the rectum, with disappearance of the tumor and amelioration of the symptoms. There was an extension of the inflammatory process from the bladder up the ureter resulting in abscess of pelvis of kidney. After this, at intervals varying from two weeks to two months, symptoms of pyelitis would return with a reappearance of the tumor, after twenty-four to forty-eight hours. There would discharge from the bladder, two to four ounces of pus, of thick, creamy and greenish appearance. This pus was always discharged after the first time by the bladder, and always in advance of the urine. In December, 1894, I suspected a tubercular pyelonephritis, but microscopic examination showed no bacilli and no casts. About this time, severe dyspeptic symptoms appeared, such as flatulency, causing dyspnœa after eating the blandest food, constipation alternating with diarrhœa, these symptoms abating and returning as the kidney lesion was better or worse.

In October, 1895, the patient presented all symptoms of severe septic infection, greatly emaciated, skin sallow, rigors followed by flushes, complete anorexia. She was taken to Dr. Richard Douglass, who readily diagnosed a pyonephrosis, and after an examination of the bladder and ureters by use of the cystoscope, finding normal urine flowing from the left kidney, he decided on a nephrotomy, which was done the second day following. The lumbar incision was made and kidney exposed, when an exploration was made with the aspirating needle attached to a Kelly aspirator. This showed pus. An incision was made and about four ounces of pus escaped. All pus sacs were broken up by the finger, afterwards irrigated and capsule stitched to wound and packed with iodoform gauze. The patient recovered rapidly, and after a few days no trace of pus could be found in the urine. Prior to the operation she passed twenty-three ounces of urine in twenty-four hours, and a few days after the operation she passed forty-three ounces. Her general health improved rapidly, appetite and digestion good. The wound healed, leaving a sinus which refused to heal and was opened up and curetted.

The Country Doctor.

There's a gathering in the village that has never been outdone
Since the soldiers took their muskets to the war of sixty-one.
And a lot of lumber wagons near the church upon the hill,
And a crowd of country people, Sunday dressed and very still.
Now each window is pre-empted by a dozen heads or more,
Now the spacious pews are crowded from the pulpit to the door,
For with coverlet of blackness on his portly figure spread
Lies the grim old country doctor in a massive oaken bed;
Lies the fierce old country doctor,
Lies the kind old country doctor,
Whom the populace considered with a mingled love and dread.

Maybe half the congregation, now of great or little worth,
Found this watcher waiting for them when they came upon the earth.
This undecorated soldier of a hard, unequal strife
Fought in many stubborn battles with the foes that sought their life.
In the night-time or the day-time he would rally brave and well,
Though the summer lark was fifing or the frozen lances fell,
Knowing if he won the battle they would praise their Maker's name,
Knowing if he lost the battle then the doctor was to blame.
'Twas the brave old virtuous doctor,
'Twas the good old faulty doctor,
'Twas the faithful country doctor, fighting stoutly all the same.

When so many pined in sickness, he had stood so strongly by
Half the people felt a notion that the doctor couldn't die.
They must slowly learn the lesson how to live from day to day
And have somehow lost their bearings, now this landmark is away.
But perhaps it still is better that this busy life is done,
He has seen old views and patients disappearing one by one,
He has learned that death is master both of science and of art,
He has done his duty fairly and has acted out his part,
And the strong old country doctor,
And the weak old country doctor,
Is entitled to a furlough for his brain and for his heart.

—Will Carleton.

COMMUNICATIONS.

CHOREA.

F. M. LAWRENCE, M.D., PHILADELPHIA.

By chorea we of to-day understand a disorder far different from the hysterical dancing mania of the Middle Ages which found its cure in a visit to the shrine of St. Vitus. As defined by Bartlett, chorea is "a disease occurring mostly in children and young people, characterized by irregular involuntary movements of the voluntary muscles, said movements occurring both during rest and attempts at motion, interfering with the accuracy of voluntary movements, and not infrequently attended by evidence of mental weakness."

Of the underlying cause of this so-called "insanity of the muscles", volumes have been written, data have been carefully sifted and resifted, and all sorts of statistics have been presented. And yet the true nature of chorea is still in doubt. There are many theories, however; and my purpose is not to present new hypotheses, but to consider those which have met with the widest acceptation, and to weigh the evidence for or against each one.

Chorea is essentially a disease of early childhood and youth—of the emotional period of life. It is far more common in the emotional sex—in girls. Fright, or other mental or psychical disturbance, is the commonest exciting cause. In at least one-sixth of the cases, and probably more, there is direct neuropathic heredity. Finally, it is like neurasthenia and many of the more serious mental affections, more often than not accompanied by a varying degree of anæmia. Viewed in the light of these facts, how close is the similarity between neurasthenia, dependent upon mental and physical exhaustion, and chorea, dependent upon instability of motor control; both due to defective cellular nutrition, and both relieved by measures calculated to improve that condition.

There are other facts to be regarded. As in anæmia, in chorea cardiac murmurs, usually mitral systolic, are heard with striking frequency—probably in one-half of all cases. How are these to be explained? Many authorities look upon them as purely functional manifestations, but not a few regard them as of inflammatory origin, due to endocarditis. An attempt to go back a step farther has led these observers to recognize a direct relation between rheumatism and chorea, and impressive statistics have been presented in support of the belief. It is not for me to antagonize so widely accepted a belief, yet a review of thirty-five cases recently seen in dispensary service lends no support whatever to the theory. In only two of the thirty-five cases was a rheumatic history obtainable, a percentage little if any larger than might be found in any series of cases of almost any disease. Against the rheumatic theory stands the fact that, although rheumatism occurs three times in boys to once in girls, two girls to one boy are affected by chorea. Moreover the choreic heart murmur, like the anæmic, often disappears on recovery, which would hardly be the case were it dependent upon an endocardial inflammation.

Kirkes, supported by Hughlings, Jackson and others, believes chorea to be dependent upon minute emboli which are carried from vegetations upon the valves of the heart and become lodged in the capillaries in the corpora striata. Supporting this, is the fact that such lesions have been found in a few fatal cases, and in lower animals an induced capillary embolism of the corpora striata has produced choreic movements.

A more recent theory is that of Dana, who defines chorea as a disease "primarily of the blood-vessels and blood with secondary degeneration in the parenchymata, due to some microbe, or toxic substance, or both. The anatomi-

cal seat varies, but it is chiefly in the cortical or sub-cortical motor centres." Although this can hardly be regarded as a satisfactory explanation, it is in line with the belief of Koch in a microbic origin. Recent bacteriological researches by Pianese resulted, in three out of fifteen cases, in the isolation from the blood, of a bacillus inoculation with which caused the appearance of the disease in dogs. The infectious theory finds further support in Triboulet, who reports three cases of secondary infection by the staphylococcus in chorea, and who believes that in four-fifths of the cases infection could be traced as the causative factor.

However interesting these theories, none seem to me so tenable as the functional theory of Sturges. Certainly there has been found no constant pathological change, although a functional change in all probability implies an altered nutrition of nerve elements. Moreover, no pathological lesion known as occurring in other diseases will produce true chorea.

For a proper understanding of this functional theory, we will have to glance at the modern view of the physiology of the cerebral cortex. A "concept," to use the term of the logicians, results from the association of the different cortical cells receiving the impression which constitutes it. The stimulation of any one of these smaller groups calls into activity others, and upon this association of smaller groups into larger, depends a train of thought.

But one train of thought can occupy the mind at one time. Should an impression be so intense as to force itself upon attention, conscious selection of concepts is at once destroyed. In other words, the action of the sensory cells is rendered so violent as to break in upon the train of thought. In addition, such disturbance lessens the inhibitory action of the sensory cells of the cortex upon the cortical motor centres. If mild in degree, this is shown by the fact that the motor cells being incapable of originating movement, *per se* the individual stands motionless as a statue. But let the emotion be more severe, and the lack of control exercised by the sensory cells permits an increased inhibition by the cortical motor cells over those of the spinal cord, diminishing the normal rhythmical discharges by which the latter keep up the tone of the body, and so permitting general muscular relaxation to ensue.

Finally, let the stimulation be yet more severe and the control of the sensory cortical cells may be entirely lost. As a result, the motor cells rapidly discharge themselves, producing first convulsions, then exhaustion. This increase and subsequent weakening of the inhibitory influence of the cerebral cortex is manifested by other disturbances. Heart-beat and respiration are at first retarded, then become rapid and violent; digestion is arrested; there is an increased excretion of urine; the vasomotor system is profoundly affected.

Such a disturbance of the nerve centres may result in degenerative changes, and thus we have neurasthenia, epilepsy, hysteria, chorea, the character of the disease depending upon the degree of development of the nervous system, its hereditary or acquired weakness and the duration and intensity of the cause.

True chorea is a disease of childhood and adolescence, the period when the cerebral cells have not yet developed that co-ordinating dominion upon which "self-control" depends. The normal irritability of the nerve cells, always greater in female than male, has not yet diminished with age. Hence it is that violent cell action is readily excited by emotions, and the lack of habitual inhibition loosens the already irritable lower centres. The normal muscular movements produced by emotion resemble most strikingly those of chorea.

In proof that chorea is a disease of cerebral origin, it is necessary only to note: 1. The movements cease during sleep. If the disease were of spinal origin, they would be exaggerated in consequence of the lessened cerebral inhibition. 2. The disease is unilateral. Spinal disorders are generally bilateral. 3. The arm is involved far more than the leg, because it is more directly under cerebral control.

To sum up, then, chorea is best considered a disease of the cerebral cortex, especially of its superficial layers, and its manifestations are due to the lessened inhibitory influence of the superficial sensory cells over the deeper motor cen-

tres. So long as the motor centres are not damaged, the manifestations will take the form of involuntary movements, from the normally associated cells stimulating similarly associated muscles. When, however, the motor cells are involved in the lesion, and the uneven amount of involvement breaks up the normal associations, then will occur irregular contractions of muscles or portions of muscles.

This seems, at present, the most tenable hypothesis of chorea. Further research may modify our views, but I venture to predict that whatever may be the explanation ultimately reached, its foundation will be the theory of cortical nerve instability.

THE WARING PLAN FOR THE SCIENTIFIC DISPOSAL OF STREET SWEEPINGS AND GARBAGE.

The plan proposed by Col. Geo. E. Waring, New York, street commissioner, for the final disposition of street sweepings and garbage, commends itself at a glance to everybody who has given thought to the subject. His four specifications cover the whole field of operations with scientific clearness and completeness, and no one can doubt that if he is permitted to carry out his ideas, his success in this direction will be as great and satisfactory as it has been in the cleaning of the streets. His present propositions are, in fact, the culmination of his work, placing the finishing touches upon what all men are agreed in pronouncing the most perfect administration of a municipal department which this city has ever seen. His recommendations should be regarded in the light of what he has already accomplished. As an expert, his opinion must be accepted as outweighing that of all other persons.

(1) Garbage will be kept separate in such vessels as the board of health may prescribe, and will be collected by special carts.

(2) Ashes and dust (free from paper and other rubbish) will be kept within the house, or in the back yard, in special cans. From these they will be removed in tied bags by department men, who will stand them on the edge of the sidewalk.

(3) Street dirt will be placed in a bag (carried on a light truck) as fast as it is swept up. When the bag is filled, it will be tied and stood on the sidewalk. This system has been in use in Madison avenue since last summer, and is now being extended. The ash carts will move slowly along the streets, with enough men attending to throw the bags into them as they pass. Thus, the shoveling of sweepings and the emptying of receptacles, as well as the standing of receptacles on the streets, and the collecting of sweepings into piles, with their attendant dust, litter, and nuisance, will be forever done away with.

(4) All refuse other than garbage, ashes, and dust will be kept within the house until called for by the department "paper-carts," which will remove everything the householder wants to get rid of, from an envelope to a mattress or a cooking-stove. These things will be taken to central depots, where everything of salable value will be separated, and all else will be cremated.

When this system is in complete operation, not only will the streets be clean, but they will also be tidy. Blowing papers and the dust nuisance will have disappeared. Furthermore, the $80,000 hitherto received by the city for the privilege of picking bones, bottles, rags, etc., during the trimming of the scows will be replaced by many times that amount received for the much larger quantity of material collected, and collection in much better condition. There are further possibilities, as to the use of unsalable paper for pasteboard, the development of steam for power by the burning of refuse, the use of ashes for making brick and concrete work. But concerning these we are not yet in a position to make any public statement.—*Pub. Opinion.*

TRANSLATIONS.

MEDICAL PRACTICE ABROAD.*

(Formerly Therapeutic Suggestions from Foreign Journals.)

Treatment of Hemorrhage Caused by Vicious Insertion of the Placenta.

Dr. Pinard, (*Bull. Méd.*, 1896): If during pregnancy or labor a hemorrhage, caused by a vicious insertion of the placenta, takes place and is serious enough to accelerate the pulse over 100, intervention to remove the cause of the hemorrhage and hasten as much as possible the expulsion of the fœtus is necessary. Transverse presentation must be changed to a vertex presentation. It is very often sufficient to tear the membranes, thus removing the first cause of hemorrhage. The introduction of an incompressible balloon will prevent the fœtal part from directly detaching the placenta by engagement, and thus hasten the labor. In cases where the hemorrhage takes place during the period of the delivery, either before or after the expulsion or extraction of the placenta, have recourse to intra-uterine continual injections with hot water (48 or 50° C.) When the quantity of the lost blood being considerable gives the symptoms of acute grave anæmia, have recourse to injections of artificial serum into the cellular tissue with doses from 200 to 2000 gr. according to the gravity of the case.

Intra-Tracheal Injection.

A method of intra-tracheal injection which is very simple and easy, without any danger or special inconvenience for the patient (*Clerc. Lyon*, 1896), is based upon pulmonary physiology and experimentation. All pulmonary affections can be treated by this method, which has had excellent clinical results, but it is principally employed in fetid bronchitis, pulmonary gangrene and pulmonary tuberculosis. Menthol for intra-tracheal injections was tried in 1888 by Dr. Carel but did not give satisfactory results. Now, creosote is administered by injections in doses of ten ccm. (solution of 1:20). This manner of administration of creosote must be employed in the cases where the state of the digestive tube forbids its internal use.

Acidum Picricum for Burns.

Acidum picricum in solution has analgesic properties. (*Th. de Paris*, 1896). As an antiseptic it avoids suppuration, and in cases where suppuration has already begun it diminishes the amount of pus and has even caused it to disappear. By its keratoplastic properties it facilitates the production of epidermic tissue and consequently favors the cicatrization of large wounds. Applied immediately upon burns, it prevents phlyctenosis and cutaneous congestion. Being unable in an aqueous saturated solution to produce causticity, cutaneous irritation, or general poisoning on the sound skin or in the entire organism, the acid can be employed for all kinds of burns, superficial or deep, of limited or large area. In case of large burns the patient is placed in a bath of the acid, while where the burns are limited in area it is well to clean the burned part antiseptically and open the vesicles, then dress the wound with gauze soaked in:

Acid. picri.	gr. 5	(℥iss).
Alcohol	50	(℥iss).
Aq. dist.	1000	(℥xxxiii).

Place cotton over the gauze and fix all with a bandage. This dressing is left on from three to four days, then renewed and left for five to six days. Generally two or three dressings are sufficient.

Hysterical Deafness.

(*Brit. Med. Jour.*, 1895): A youth of nineteen years became deaf and mute in a period of a few days, the objective examination revealing no cerebral lesion. Kalium bromatum was administered and the patient recovered the next day. He stated that sometime before he had lost speech and hearing in a similar manner.

*Translated for THE MEDICAL AND SURGICAL REPORTER by A. Gordon, M.D.

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PHILADELPHIA, SATURDAY, MAY 16, 1896.

EDITORIAL.

INFANTICIDE AND FŒTICIDE.

From a medico-legal standpoint there is, in many respects, close kinship between abortion and fœticide. By the common law, the destruction of an infant *in ventre sa mere*, no matter at what stage of gestation, is a high misdemeanor. The word abortion has been legally interpreted as synonymous with miscarriage in its primary meaning. It has a secondary meaning, in which it is used to denote the offspring. Miscarriage, both in law and in philology, means the bringing forth of the fœtus before it is perfectly formed and capable of living. The term fœticide has grown to designate the act by which animal abortion is produced. It is distinguishable from infanticide in being limited to the destruction of the life of the fœtus *in utero*. The crime of infanticide can be committed only after the child is wholly born.

As bearing upon one important phase of the subject we cannot do better than quote from an opinion of an eminent judge in a Pennsylvania case. The error assigned was, "that it ought to have been charged that the woman had become *quick*." The Court said: "But although it has been so held in some states, it is not, I apprehend, the law in Pennsylvania, and never ought to have been the law anywhere. It is not the murder of a living child which constitutes the offence, but the destruction of

gestation by wicked means and against nature. The moment the womb is instinct with embryo life,and gestation has begun, the crime may be perpetrated."

Wharton and Stille, from their careful study of the law as given in numerous decisions, lay down the following legal propositions as established:

1. "Where there is a malicious wound inflicted on an infant, with intent to produce death, and death ensues after birth, the offence is murder.

2. "Where there is malicious exposure of an infant, with intent to produce death, and death ensues after birth, it is murder.

3. "Where there is wanton exposure of an infant, without the intent to produce death, but with the expectation of shifting the support of the infant upon some third person and death ensues after birth, it is manslaughter.

4. "Where there is exposure resulting from necessity, non-culpable ignorance or insanity, and death ensues after birth the offence is excusable homicide," in which, according to American practice,the accused is entitled to an acquittal. Where the intent of the criminal abortionist is to relieve the woman of the fœtus—there is absence of the specific intent, the *malice-prepense*, essential in murder in the first degree, so the offence where death ensues, can never be of any higher grade than murder of the second degree."

Questions of considerable nicety sometimes arise in trials for infanticide, as to whether death took place after the child was actually born or whilst it was in progress of being born. Although the law be clear that a child must be actually born to be the subject of murder, it is not so clearly and definitely settled as to what, for this purpose, constitutes actual birth.

The Courts have decided that, "the being born must mean that the whole body is brought into the world, and it is not sufficient that the child respires in the progress of the birth. The child might breathe before it was born, but its having breathed is not sufficiently life to make the killing of the child murder, there must have been an independent circulation in the child or the child cannot be considered as alive for this purpose."

As put by a learned medical jurist: "If the argument should ever be used in any case of infanticide, that the violence was inflicted upon a child which had lived without breathing, it would have to be sustained by other testimony or evidence than that of a medical expert,—since there is no medical proof of extra-uterine life, independent of respiration. Hence the commission of infanticide, by submerging a child in water before it has breathed, or the exclusion of air from it in any other way in which no external marks are left, deprives the medical examiner of the means of deciding whether the act was committed upon a living child. Because, we repeat, the lungs remain in the same condition after as before birth, provided respiration has not taken place, and, in the short interval of existence possible under such circumstances, no other change could occur which could be relied upon as an indication of extra-uterine life. It would appear that the efforts to breathe, although unsuccessful in inflating the lungs, modify the circulation of the blood so as to leave certain proofs of the fact."

Unquestionably, there are cases of pregnancy where it becomes a matter of certainty that the fœtus cannot come to maturity, or to birth, without the destruction of either the mother or the child, and sometimes of both. But one who should attempt unlawfully to procure an abortion in such instance, without being aware of the embarrassments in the

case, is not to be acquitted of the attempt to commit a crime because thereafter it might become necessary for the surgeon, in the course of legitimate practice, to destroy the fœtus. The law discriminates between the lawful operation of the medical man, in the due course of his legitimate practice when it becomes imminently perilous to delay longer, to interfere with the due processes of natural growth, and that voluntary interference which is prompted by no such motives, but originates in a reckless disregard and defiance of the laws of nature, in order to procure an abnormal exemption from those natural results of illicit or unbecoming indulgence, which the law therefore reprobates.

The courts are getting rid of many legal refinements in connection with these cases. Statutes are made more responsive to the demands of better public morals. The tendency is to take a broad view of these cases and to consider that there are important considerations connected with the offence besides the preservation of the life of the child. The life and health of the mother, and the probability of future offspring are all so seriously put at hazard by such transactions, when produced mechanically or medicinally, that it is not easy to determine precisely which is the more important purpose of the law—to prevent the injury to the child or to the mother.

The evil example of such practice; the effect upon society; the teaching to mothers—or thus attempting to teach them—the facility with which they may escape the perils of child-bearing and the consequent responsibility and the impediments to a life of ease and vicious indulgence are most pernicious consequences and are, no doubt properly, to be regarded as fairly coming within the evils to be considered in fixing the construction of the law and its purpose.

The general form of expression—"pregnant with child" applies to every stage of pregnancy from earliest conception, and extends through its entire term until the actual expulsion of the fœtus. Authorities agree that the protection of the law is cast around an unborn child from its first ascertainable stage of existence—no matter whether quickening had taken place or not, and that consequently, no matter what may be the stage of gestation, an indictment lies for its wilful destruction. "To make the criminality of the offence depend upon the fact of quickening, is as repugnant to sound morals as it is to enlightened physiology. That it is inconsistent with the analogies of the law, is shown by the fact that an infant, born even at the extreme limit of gestation after its father's death, is capable of taking by descent and being appointed executor."

In most of the states statutory provisions now exist by which fœticide is made the subject of specific penalties.

PEDDLER.—"That little book on 'How to Preserve the Hair' is the key to the entire situation."

BALDHEAD.—"I am very sorry, but I haven't a single lock that it would fit."—*Christian Ad.*

Tommy's Mother—Won't you have another biscuit? The Favored Guest—Thank you! I really don't know how many I've had already. Tommy (enviously)—I do! You've had six.—*Puck.*

It is in vain to suppose that the poor should adopt better methods of choosing and preparing their food till they are furnished with better implements and utensils for cooking.—*Rumford.*

"Annual bargain sale now going on. Don't go anywhere else to be cheated," is the rather dubious manner in which a New York furniture dealer worded his announcement.—*Mid-Continent.*

ABSTRACTS.

AN ENGLISH VIEW OF MEDICAL ETIQUETTE AND THE INTERESTS OF THE PUBLIC.

The real importance of the great medical libel case, Kitson vs. Playfair, lies not in its result so much as in the incidental revelation of the extraordinary code of professional etiquette, practically authorized by the College of Physicians, which the eminent medical men who supported Dr. Playfair, disclosed to an astonished public. The general public had up to then believed that the secrets of patients, confided to medical men in professional consultation, were held inviolate, not only by the individual trustworthiness and personal sense of honor of the medical men, but by the established etiquette of the profession. This the general public now learns to be an error, and a view of the etiquette of the medical profession is set forth which, if it had proceeded from anti-vivisection or anti-vaccination critics, would have been considered a gross attack on an honorable and distinguished profession. We are well aware that a great body of our medical men are men of honor, and may be depended upon to take the highest view of their responsibilities to their patients; but it is a very serious thing that the etiquette of the profession—for in no profession is etiquette a greater force—should support so lax a view of the duty of the medical man with respect to the revelation of secrets learned in the medical confessional.

The feeling of the public to-day on hearing that the etiquette of the profession does not demand that medical men, under certain circumstances (for instance, the protection of their own families from contact with persons whom they consider to be actually in a position to deserve the sentence of social ostracism), should hold inviolate the secrets of their patients, committed to them while on duty in the medical confessional, is nothing short of astonishment and dismay, a feeling which found expression in the indignant comment of Mr. Justice Hawkins at the recent trial. There is good reason for this. Gradually, but surely, the medical confessor has succeeded to the power and privileges of the clerical, and the place of the priestly confessional in the past is to-day occupied by the medical; a place which the success of medical science in general, and surgical science in particular, is daily establishing with more assured and universal power among all classes of society. In the palmy days of the priestly confessional what would have been thought of father confessors who revealed the secrets of the confessional? And in our own time, to look at the immediate present, what would be thought of a solicitor who revealed, for some private and personal reason, the private affairs of his clients? And yet, if the confidence placed in the trustworthiness of a legal adviser is great, not less, but rather more, is the trust necessarily placed by a patient in the doctor to whom he confides the most secret and delicate facts of his life in the medical confessional. That medical men as well as legal advisers are, generally speaking, worthy of the trust reposed in them may be unreservedly admitted; but the danger of having to rely on individual honor and individual discretion where the code of etiquette permits a perilous laxity can hardly be overestimated. If his patients were to be convinced that a particular medical man held himself free to communicate the secrets of his patients to his wife, not to speak of other members of his family, there can be little doubt that the majority of them would seek medical aid and advice elsewhere. And what is true of the individual doctor is true of the profession collectively. If the etiquette of the profession does not, as was formerly supposed, thoroughly and scrupulously protect the patients, the public will feel that the old confidence can no longer be reposed in the physician, and vital facts will be suppressed by patients at the

risk of their own health and to the detriment of the medical man's success in treating his cases.

What makes this particular laxity the more censurable is that there is probably no other profession in which professional etiquette is more strongly established and rigorously enforced. But the cause of this laxity is not far to seek. Medical etiquette is selfish, plainly intended for the protection of the doctor, and too commonly careless of, or even distinctly opposed to the interests of the public. What, for example, is the customary etiquette when a medical man is called in to pronounce upon a serious case which has been making no progress under another medical man? The medical man who is called in finds, perhaps, that the unsuccessful doctor has made a wrong diagnosis of the disease, or, at any rate, has treated it wrongly. Is he permitted by medical etiquette to speak the truth and state what he finds? Certainly not. He must publicly express to the patient and his friends satisfaction with the treatment and privately explain to the erring disciple of Esculapius the errors of it. In short he must consider the infallibility of the profession, not the truth of the case or the interests of the patient. Accordingly he hides the incompetency of the medical man, and leaves him to go on misleading the public to the danger of their health, if not of their lives. The habit is thus engendered of authoritative statement where the knowledge of the doctor is really insufficient or uncertain, and the public are deceived to their danger and loss.

In short, to support the general credit of the profession the physician must economize, if not distort the truth, and gravely imperil the interests of the patient and of the public, while for personal reasons, such as the reason we have instanced, he may disclose the secrets of his patients or use the threat of disclosure to compel them to act in a way he chooses to think fit. He is allowed to obtain information under seal of the supposed inviolable secrecy of the consulting-room and then permitted to make it known under certain circumstances, to the detriment and danger of his trustful confidants. The College of Physicians appears to authorize, and the distinguished medical men who supported Dr. Playfair appear to entertain this lax view of the seal of silence, which the public had supposed to guard inviolate the secrets of the consulting-room; while it must be assumed they have at least no disapproval for the etiquette which covers the errors of the ignorant practitioner regardless of the interests of his patient and of the public. Experience shows that the average medical man is by no means infallible, and it would certainly be most perilous to the interest of the public were he to be expected to report to the Public Prosecutor his suspicions of patients based on symptoms or signs he had observed when consulted in his professional capacity.

It would be easy to show much more fully that medical etiquette, while careful of the general credit of the profession, is careless of the interests of the public. We will content ourselves with a single instance of what we mean. The great established means of reaching the public to-day is advertisement in the press. This is used now as a matter of course by our leading authors and by many of the leading clergy of the Church of England, as well as by those of the various Dissenting bodies. Yet this chief means of bringing the public into touch with them is absolutely prohibited to members of the medical profession. It is prohibited to the able and highly qualified young medical man, while he must look on and see it used in all its unrivalled efficacy by the quack doctor and the sham specialist. Of course this etiquette secures the great bulk of the lucrative practice for the successful elder men in the medical profession; but it not only leaves the younger men out in the cold, by forbidding them to publish their qualifications, it does a far more serious disservice to the public, who are thus abandoned to the mercy of the quacks and charlatans, who do reach a wide circle only too successfully; while numbers of really competent and qualified medical men are ready to exercise the healing art, but are left without patients, the senseless professional etiquette barring the means open alike to the author and the clergyman, and condemning the public to ignorance of the qualified professional ability at their disposal.

Already, we believe, medical men are

allowed to advertise in the press in the United States and the result is that the most highly qualified men have more practice, and the quack and the sham less. In the interests of the public it is time that some united effort should be made by the large number of progressive minds in the medical profession, and the great means for bringing the public who need advice into touch with the professional men who are qualified to supply it should be rescued from its present misuse, and employed to the general advantage of the medical profession, and, what is far more important, in the interests of the vast public which can be effectively reached in no other way than by advertisement in the press. A plan could surely be devised by which those only whose qualifications were proved by the possession of the regular degrees and the passing of the regular examinations should be permitted to advertise. Let the public have a choice between American quacks and qualified English practitioners, and the result cannot be doubtful. This, too, would give a new value to scholarships and medals as well as degrees; and what is true of medical and surgical practitioners would be found at least equally true of numbers of highly qualified dentists, who, owing to the prohibition of advertisement by the same senseless etiquette, make a difficult living, while they watch American and Jewish charlatans raking in large fortunes from a public that is left at their mercy.

EDWARD JENNER.*

Edward Jenner, the author of what Matthew Baillie called the most important discovery ever made in medicine, was throughout his professional career, with the exception of a brief period during which he practised in London, a country doctor. He was born at Berkeley, a Gloucestershire village of which his father was vicar, on May 17th, 1749. His mother was the daughter of a former incumbent of the same living. The Jenner family was of great antiquity in Gloucestershire, and several members of it, including Jenner's two elder brothers, held preferment in the Church. When, in honor of his great discovery, the University of Oxford conferred upon him the degree of Doctor of Medicine, he said—"It is remarkable that I should have been the only one of a long line of ancestors and relations who was not educated at Oxford. They were determined to turn me into the meadows instead of allowing me to flourish in the groves of Academus." Happily for mankind, it was in the meadows that Nature had hidden the treasure of knowledge which it was reserved for him to find.

Jenner lost his father in early childhood, but he found the loving care of a parent in the guardianship of his elder brother, the Rev. Stephen Jenner, B.D., Fellow of Magdalen College, Oxford. At the age of eight he was sent to school at Wotton-under-Edge, from which after a time he was transferred to Cirencester, where, under the Rev. Dr. Washbourn, he was ground in the classical mill through which all boys at that day had to pass. But very early it became clear that his tastes ran more towards the investigation of living things than to the study of dead languages. Before he was nine years old he had made a collection of the nests of the dormouse; and at Cirencester he often spent his play-hours in searching for fossils. On leaving school he was apprenticed to Mr. Ludlow, of Sodbury, near Bristol, a medical practitioner of considerable local reputation. After completing his term of apprenticeship, in 1770 Jenner went to London to finish his medical education at St. George's Hospital. During his stay in London he was a pupil of John Hunter, under whose roof he lived for two years, and with whom he contracted a close friendship which lasted unbroken till the great anatomist's death. To the end of his life the pupil was wont to speak affectionately of his master as the "dear man." His letters to Hunter are

* From the "Jenner Centenary" *Practitioner.*

unfortunately lost, but those of Hunter to him were carefully preserved by Jenner. They show the famous surgeon in a very pleasant light, asking Jenner to collect hedgehogs, eels, porpoises, salmon spawn, fossils, etc., for him, suggesting experiments on the temperature of animals, and various problems of natural history such as a resident in the country would be likely to find opportunities for solving. In 1771 Captain Cook returned from his first voyage of discovery, and the specimens of natural history which had been collected were prepared and arranged by Jenner, who had been recommended to Sir Joseph Banks by Hunter for the purpose.

In 1773 he returned to his native place, where he quickly won for himself a high reputation, not only for skill in the art of healing, but for general scientific knowledge. He continued to give as much attention to the study of natural history as his professional engagements allowed, and was an indefatigable collector, as far as his opportunities admitted, of specimens illustrating comparative anatomy. In 1775 Hunter communicated to him a scheme for the establishment of a great school of anatomy, human and comparative, in London, and suggested to Jenner that he should take part in the enterprise as assistant. Jenner, however, did not see his way to accept the proposal, and as he refused more than one offer of a good appointment in the East Indies, it is probable that his modest life in the country suited his tastes better than a more ambitious existence in the capital or abroad.

Jenner's appearance at this period is described as follows by Edward Gardner (a schoolfellow of Thomas Chatterton), who for the rest of his life was one of his most intimate friends:—

"His height was rather under the middle size; his person was robust, but active and well-formed. In his dress he was peculiarly neat, and everything about him showed the man intent and serious, and well prepared to meet the duties of his calling.

"When I first saw him, it was on Frampton Green. I was somewhat his junior in years, and had heard so much of Mr. Jenner, of Berkeley, that I had no small curiosity to see him. He was dressed in a blue coat and yellow buttons, buckskins, well-polished jockey boots with handsome silver spurs, and he carried a smart whip with a silver handle. His hair, after the fashion of the times, was done up in a club, and he wore a broad-brimmed hat.

"We were introduced on that occasion, and I was delighted and astonished. I was prepared to find an accomplished man, and all the country spoke of him as a skilful surgeon and a great naturalist; but I did not expect to find him so much at home on other matters. I, who had been spending my time in cultivating my judgment by abstract study, and, smit from my boyhood with the love of song, had sought my amusement in the rosy fields of imagination, was not less surprised than gratified to find that the ancient affinity between Apollo and Esculapius was so well maintained in his person."

The Apollo element in Jenner manifested itself in a taste for music, which he indulged by singing catches, and by playing the flute and violin, and in a turn for the making of verses which show an eye for Nature.

In 1788 he presented to the Royal Society a paper on "The Natural History of the Cuckoo," and in the same year he was elected a Fellow of that distinguished body. In 1792, the fatigues of general practice having become irksome to him, he determined to confine himself to medicine, and with that view he obtained the degree of M.D. from the University of St. Andrews.

The intellectual seed which grew into so splendid a harvest was sown in Jenner's mind while he was an apprentice at Sodbury. A young countrywoman came one day for advice, and on something being said in her hearing about small-pox, she at once said: "I cannot take that disease, for I have had cow-pox." This was the first time Jenner had heard of a piece of medical folk-lore which was fairly well known in the district, and it made a deep impression upon him. The idea remained in his mind, slowly but surely maturing. He spoke to Hunter in the days of his pupilage, of the Gloucestershire belief in the protective effects of cow-pox, and Hunter referred to the subject both in his lectures and in conversation, but apparently attached little importance to it. The matter, however, haunted Jenner's mind, and he spoke about it to his medical acquaintances in season and also, it would appear, out of season, for he says that the members of a Medico-Convivial Society at Rodborough, to

which he belonged, threatened to expel him if he persisted in boring them about cow-pox. Feeling sure, however, that he was on the right way, he went on working in the spirit of his great master's precept—"Why think? Why not try the experiment?"

On May 14, 1796, he had at last an opportunity of fairly testing the prophylactic efficacy of cow-pox. Matter was taken from the hand of Sarah Nelmes, who had been infected by her master's cows, and inserted by two superficial incisions into the arms of James Phipps, a healthy boy about eight years old. The symptoms that followed were those now familiar to everyone. On July 1st the boy was inoculated with matter from small-pox pustules without any result. This was the first successful vaccination. In 1798 Jenner published his observations in a small book entitled, "An Inquiry Into the Cause and Effects of the Variolæ Vaccinæ, a Disease discovered in some of the Western Counties of England, particularly Gloucestershire, and known by the Name of Cow-pox." The appearance of this quarto of seventy-five pages marks an epoch in the history not only of medicine but of mankind. The discovery was received with enthusiasm, and within a few years of its announcement the new method of preventing small-pox had spread all over the world.

Jenner was not only the prophet but a most active apostle of vaccination. Besides vaccinating all who came to him—and there were sometimes three hundred people at his door—he conducted an enormous correspondence, sent out lymph, and, to use his own expression, was vaccine clerk to the world. This interfered with his practice to such an extent that he would have been impoverished by the discovery which has made his name immortal had not Parliament voted him a sum of £10,000, and afterwards a further grant of £20,000, in acknowledgment of his disinterested labors. Had he chosen to keep his method secret, there is little doubt that he could have become, in Johnson's phrase, "rich beyond the dreams of avarice."

But if his discovery did not bring him wealth, it brought him such honor as has rarely fallen to the lot of a member of the medical profession. The list of the honorary degrees, diplomas, etc., conferred on him extends over six octavo pages of small print in Barron's "Life," and includes nearly every learned body in the world. An appeal from him induced Napoleon to release two prisoners with the remark—"It is impossible to refuse anything to that man." A few lines from Jenner served as a passport on the Continent when all Europe was at war. He had medals struck in his honor, and his praises were sung by poets as if he had been a conqueror. And, indeed, Jenner conquered Death in one of its strongholds, for it has been estimated that in his own lifetime he saved more lives than the ambition of Napoleon destroyed.

Jenner lost his wife in 1815, and he passed the remainder of his days in comparative retirement at Berkeley. He died of apoplexy on January 26, 1823, and was buried in the village church, the family having declined the offer of a grave for him in Westminster Abbey.

He was a man of the warmest domestic affections, and had that capacity for friendship which is one of the marks of a fine nature. He was a thoroughly good-hearted man, modest, but, withal, able to hold his own against the best; fond of a quiet joke and of simple pleasures. Dibdin, in his "Reminiscences," says: "I never knew a man of a simpler mind or of a warmer heart than Dr. Jenner." He was an honest seeker after truth, and one feels that he is sincere when he says in a letter to one of his critics: "Should it appear in the present instance that I have been led into error, fond as I may appear of the offspring of my labors I had rather strangle it at once than suffer it to exist and do a public injury." He was a man of great practical sagacity as well as originality of mind. He recognized the symptoms of angina pectoris in John Hunter, and suggested the connection of the disease with ossification of the coronary arteries when the pathology of the affection was practically unknown.

He held that the domestication of animals was a prolific source of diseases among men, and he startled Humphry Davy by throwing out an idea as to the usefulness of earth-worms which is a kind of anticipation of Darwin's views

on the subject. He is said to have had a peculiar horror of arithmetical questions, as if he had a foreboding of the manner in which perverse statisticians would obscure plain facts by figures.

Detractors Jenner had, as was inevitable, in his lifetime; and even at the present day there are some who not only vilify his scientific character, but speak of him personally with a rancor that would be odious if it were not ridiculous. It is noteworthy that the great man who has followed in his footsteps and developed his discovery from an isolated fact into a principle—Pasteur—is regarded in just the same way by minds of the same type. More fortunate than many discoverers, Jenner went to his grave neither beggared nor broken-hearted. He bore misjudgment, calumny, and derision with an equanimity born of the *mens conscia recti*. He spoke with more of pity than of anger of the "anti-vacks," as he called them; and he wrote to a friend who had expressed his indignation at some attack on his discovery:—"I know very well the opinion of the wise and great upon it; and the foolish and the little I don't care a straw for." A few days before his death he said to his biographer, Dr. Barron:—"I am not surpised that men are not thankful to me; but I wonder that they are not grateful to God for the good which He has made me the instrument of conveying to my fellow-creatures."

PERISCOPE.

MEDICINE.

The Serum Poisoning Case.

The details of the unfortunate issue from injecting diphtheria curative serum for prophylactic purposes by Prof. Langerhans have now been made the subject of legal inquiry. It will be remembered that Prof. Langerhans injected the serum into his own child, a boy a year and nine months old, and the child died immediately. The announcement of the death was made by the professor himself, and was to the effect that the child who was in the "most blooming health 'died' in consequence of the injection of Behring's curative serum for immunization." Prof. Langerhans is a pathological anatomist of note. He was assistant to Prof. Virchow for years, and is now Prosector at the Moabit City Hospital. He comes from a family of medical men, and is married to a daughter of Prof. Gerhardt. A year ago he had the misfortune to lose two children from diphtheria. This Easter a servant maid suffered from a dubious kind of sore throat, which he thought was diphtheria, and the girl was sent to the hospital. There his colleagues, Prof. Renvers and Prof. Goldscheider, advised him to inject his remaining child with immunizing serum for the sake of protecting him. He procured a flask of the serum from the dispensary of the hospital and gave the injection, notwithstanding the objections of his wife. Within five minutes the child was a corpse. The father sealed up the flask and forwarded it along with an announcement of the disaster to the authorities. The obduction took place in due course in the presence of the father and of a ministerialrath from the medical department of Cultusministerium. Nothing was discovered to indicate the cause of death, but the chemical examination is not yet completed. A special examination of the blood and of the individual parts, as well as of the serum employed, has yet to be made. The obduction showed, however, that the child was perfectly healthy. It also showed that the injection was properly performed, and that the perforation of the needle did not pass into the abdominal cavity and that neither veins nor lymph vessels were injured. Neither was there any embolism nor air in the chambers of the heart. The only possible cause of death then was the serum itself. In regard to this certain possibilities present themselves. The serum may have been impure originally, or decomposition may have set in, and a further examination may throw some light on these points. The facts show that the serum is not the harmless material it has been said to be, but, at the same time, the overwhelming clinical evidence in its favor shows that its usefulness far outweighs the dangers that may lie in it. When used for preventive purposes, at least, it appears highly desirable that we should have some means of testing the harmlessness of any particular sample before employing it on the human subject.—*Med. Press.*

The Treatment of Epilepsy.

In the treatment of epilepsy, the bromides have long been the sheet anchor, and while other drugs have been recommended from time to time, they have never enjoyed any de-

gree of popularity. Unfortunately, however, the employment of the bromides is not free from disadvantages, which are sometimes sufficiently serious to demand their discontinuance. Up to the present time the materia medica has contained no drug which would satisfactorily replace these preparations, but quite recently so high an authority as Prof. S. Weir Mitchell has pointed out that trional may often prove an efficient substitute for the bromides, and states that he has seen no ill effects follow its continued use for many weeks. In the March number of the *University Medical Magazine* Dr. H. P. Boyer (*Daily Lancet*) reports the results obtained by Dr. Mitchell in his clinic for nervous diseases during the past two years. In most instances where trional was employed, the patients were in some way benefited. Either the number of attacks was diminished, their severity lessened or the general physical condition of the patient improved. Of the cases in which it was used, thirteen are described in detail, and in the majority of these the results were highly encouraging. In ten of the thirteen cases recorded there was a marked decrease in the number of attacks during the treatment and the physical symptoms also were singularly improved. In five of the cases the number of attacks was less under the trional treatment than under the bromide treatment, while in two others the bromides gave more satisfactory results. The after-effects chiefly complained of were drowsiness and vertigo. It would seem, therefore, from these observations that trional, either alone or in combination with bromides, may prove an important auxiliary in the therapeutics of epilepsy. In view of the fact that this drug was introduced as an hypnotic, its sedative and antispasmodic properties have not received sufficient attention, and the above observations will, it is hoped, lead to its employment in other spasmodic disorders.

Reduced Rates to St. Louis.

The Republican National Convention will meet in St. Louis June 16th. For this occasion the B. & O. R. R. Co. will sell Excursion Tickets from all stations on its line East of the Ohio River for all trains June 12th to 15th, inclusive, valid for return passage until June 21st, at one fare for the round trip.

The Baltimore & Ohio is a direct line to St. Louis, running two solid vestibuled fast express trains with through Pullman Sleeping Cars attached every day in the year.

For rates and other information apply to nearest B. &. O. Ticket Agent.–5-t.

SURGERY.

Prostatic Hypertrophy.

At the *Gesellschaft der Aerzte*, Prof. Frisch showed a man, aged sixty-eight, who had formerly complained of prostatic hypertrophy and extensive dilatation of the bladder. On reflecting over the success of Profs. Englisch and Leittel in the removal of the testes or the tying of the vas deferens in the treatment of hypertrophy of the prostate, Frisch resolved on the tying of vas deferens, and has so succeeded in improving his patient, that instead of urinating forty times in the day, and as often during the night, he is now able to retain that secretion for two hours, or even more, at a time. The total amount of urine passed during the twenty-four hours before the operation was 2,400 grms., which has now sunk since the operation to the normal amount. Frisch considers the result of the operation a perfect success in the treatment of prostatic enlargement. —*Med. Press.*

NEWS AND MISCELLANY.

The popular impression that insanity is on the increase is combated by Dr. Edwin A. Down, of a Connecticut retreat for the insane. He says that the increase shown by official records is comparatively trifling in the last twenty years, and is more than accounted for by the change in conditions which has resulted in sending to insane asylums many persons who were previously kept in almshouses or in private families, and not reckoned in making up the record of the insane. Dr. Down finds a distinct increase of insanity due to alcoholism. It amounts in Connecticut to almost seventy per cent. in the five years ending in 1892 over the five years ending in 1882. The increase, however, is partly to be explained through the recent custom in Court to send for treatment as dipsomaniacs some of those who would formerly have been sent to jail for drunkenness. There is also an increase of the senile cases. Part of the paper is given to the discussion of hereditary insanity. Here Dr. Down lays stress on the fact that what the child inherits is "an incomplete or poorly nourished cell structure, which is incapable of fulfilling its functions at a time when it should be in a condition of the highest physiological activity." That is, insanity is not inherited directly, but a physical condition may be inherited which makes the inroad of insanity comparatively easy.

Reduced Rates to Washington.

The Young People's Society of Christian Endeavor will hold their Annual Meeting in Washington, D. C., July 7th to 13th.

For this occasion the B. & O. R. R. Co. will sell tickets, from all points on its lines, East of the Ohio River to Washington, at one single fare for the round trip, July 6th to 8th, inclusive, valid for return passage until July 15th, inclusive, with the privilege of an additional extension until July 31st by depositing tickets with Joint Agent at Washington.

Tickets will also be on sale at stations of all connecting lines.

Delegates should not lose sight of the fact that all B. & O. trains run via Washington.—8-t.

The following joint committee of the Women's Health Protective Association and the County Medical Association has been appointed to consider the most feasible plan of bringing about the construction of a pay hospital for the treatment of contagious diseases: Medical Society, Dr. J. Madison Taylor, chairman; Dr. John H. Musser, Dr. DeForrest Willard, Dr. Frederick P. Henry, Dr. Edwin E. Graham, and Dr. James C. Wilson, *exofficio.* Women's Health Protective Association, Dr. Clara T. Dercum, chairman; Olive Pond-Amies, Dr. Eleanor C. Jones, Clara E. Graff, Dr. Mary E. Allen, and Anne T. Scribner, *exofficio.*

The Women's Health Protective Association has already contributed $2300 as a nucleus for the fund necessary to build the hospital.

Dr. Anna M. Fullerton, who for the past ten years has been physician-in-charge of the Woman's Hospital, has resigned to take up private practice in Philadelphia. Dr. Fullerton has not severed her connection with the Woman's Medical College of Pennsylvania, in which she is a professor. No successor as physician-in-charge has yet been appointed.

At the meeting of the Tennessee State Medical Society, in Chattanooga, Tenn., April 15, 1896, the following officers were elected: President: G. W. Drake, M. D., Chattanooga, Tenn.; Vice-President for West Tennessee: T. R. Moss, M.D., Dyersburg, Tenn.; Vice-President for Middle Tennessee: W. F. Clary, M.D., Bellbuckle, Tenn.; Vice-President for East Tennessee: J. B. F. Dice, M.D., Morristown, Tenn.; Treasurer: D. E. Nelson, M.D., Chattanooga, Tenn.; Secretary: C. R. Atchison, M.D., Nashville, Tenn. Next meeting: Nashville, commencing second Tuesday in May, 1897.

Reduced Rates to St. Louis.

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American Medical Association is to meet next year in Philadelphia. The following officers were elected: President, Dr. Nicholas Senn, of Illinois; First Vice-President, Dr. C. M. Sternberg, of the United States Army; Second Vice-President, Dr. Edmund Souchon, of Louisiana; Third Vice-President, Dr. K. D. Thomas, of Pennsylvania; Fourth Vice-President, W. T. Westmoreland, of Georgia; Treasurer, H. P. Newman; Assistant-Secretary, Dr. T. Sneidman, of Pennsylvania; Librarian, Dr. George W. Webster, of Illinois; Chairman of Committee on Arrangements, Dr. H. A. Hare, of Pennsylvania.

Dr. Charles A. L. Reed, of Cincinnati, has been selected by the European Committee on Organization of the International Periodical Congress of Gynecology and Obstetrics, as Honorary President of the meeting of that body to be held in the city of Geneva, Switzerland, the first week in September of this year.

Prompt Train Service.

During the month of April the passenger train movement on all divisions of the B. & O. system was remarkable for punctuality. The through express trains arrived at their respective destinations on schedule time ninety-five per cent. of the time. This is a performance rarely equalled by roads operating as many trains as are run on the B. &. O., and speaks well for the efficiency of the rank and file, as well as the officials of the Operating Department.–1-t.

Medical Conventions, 1896.

Physicians and others attending the various Medical Conventions for 1896 should bear in mind that the B. & O. offers special inducements to conventions of this kind. The scenic attractions of this route are unsurpassed in this country. All B. & O. trains between the east and west run via Washington, and sufficient time limit is given on tickets to allow a stop-over at the National Capital.

The meeting of the Amer. Assoc. Genito-Urin. Sur. will be held at Atlantic City, first week in June.

The meeting of the Amer. Gynecol. Soc., in New York, May 26.

The meeting of the Amer. Laryngol. Asso., in Pittsburg, early in May.

The meeting of the Asso. Mil. Sur. of U. S., in Phila., May 12, 13 and 14.

The meeting of the Climato. Asso., Lakewood, N. J., May 12 and 13.

For rates and other information, address Chas. O. Scull, General Passenger Agent, Baltimore, Md., or L. S. Allen, A. G. P. A., Chicago, Ill.